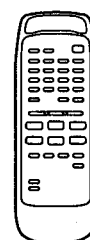
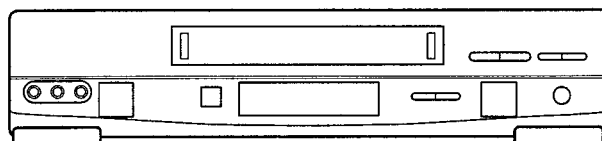


# TOSHIBA

COLOR VIDEO CASSETTE RECORDER

## V-703G/703T/703W



### SPECIFICATIONS

#### GENERAL

Video recording system: Head configuration 2-head rotary, helical scan system  
Video signal: CCIR 625 lines, 50 fields, PAL color signal  
Storage temperature: -20° to +60°C (-4° to 140°F)  
Operating temperature: 5° to 40°C (41° to 104°F)  
Antenna: 75-ohms coaxial  
Channel coverage: UHF channel 36 (31 - 39, adjustable)  
AERIAL input/output: 75 ohm  
Channel coverage:

	PAL B/G	
	V-703G/W	V-703T
VHF	E02 - E12 (02 - 12)	E02 - E12 (02 - 12) A - H, H1, H2, (13 - 20, 11, 12)
UHF	E21 - E69 (21 - 69)	
CATV	X - Z (74 - 76), S01 - S41 (01 - 41)	

Power requirement: AC 230V, 50Hz  
Power consumption: 23W  
Weight: 5.4kg (V-703G/T), 5.5 kg (V-703W)  
Dimensions: 430 (W) X 97 (H) X 335 (D) mm

#### VIDEO

Input: VIDEO LINE IN:  
(SAT.) LINE IN 1 SCART socket (V-703G/T), AUDIO/VIDEO (SCART) socket (V-703W), 1.0 Vp-p, 75Ω, VIDEO Phono type jack (front), 1.0 Vp-p, 75Ω  
Output: VIDEO LINE OUT:  
V-703G/T:  
(SAT.) LINE IN 1 SCART socket, 1.0 Vp-p, 75Ω, AUDIO/VIDEO OUT SCART socket, 1.0 Vp-p, 75Ω  
V-703W:  
AUDIO/VIDEO (SCART) socket, 1.0Vp-p, 75Ω  
Signal-to-noise ratio: More than 43 dB (SP mode)

#### AUDIO

Input: AUDIO LINE IN:  
(SAT.) LINE IN 1 SCART socket (V-703G/T),  
AUDIO/VIDEO (SCART) socket (V-703W),  
-5dBs more than 10 kΩ  
AUDIO Phono type jacks (front),  
-5 dBs, more than 47 kΩs  
Output: AUDIO LINE OUT:  
V-703G/T:  
(SAT.) LINE IN 1 SCART socket,  
- 5 dBs, less than 1 kΩ  
AUDIO/VIDEO OUT SCART socket,  
-5 dBs, less than 1 kΩ  
V-703W:  
AUDIO/VIDEO (SCART) socket, -5dBs less than 1kΩ  
Frequency response: 20Hz to 20kHz (Hi-Fi mode)  
Signal-to-noise-ratio: More than 42 dB (SP mode)  
Dynamic range: More than 90 dB (Hi-Fi mode)  
Audio track: 1 track (Normal-mono),  
2 channels (Hi-Fi sound)

#### TAPE TRANSPORT

Tape speed: SP: 23.39 mm/sec.  
LP: 11.70 mm/sec.  
Maximum recording-time: SP: 240 min. (with E-240)  
LP: 480 min. (with E-240)  
Winding time: Approx. 3 min. (E-180)

#### TIMER

Clock: 24 hour digital indication  
No. of events: 8 over 1 year

**Caution:** Copyright Act 1956 Users of video recording equipment should note that it may be unlawful to record television broadcasts, cinematograph films or video recording without the permission of the relevant copyright owner.

Design and specifications are subject to change without notice.

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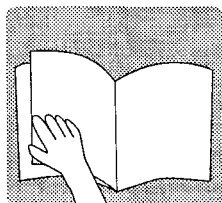
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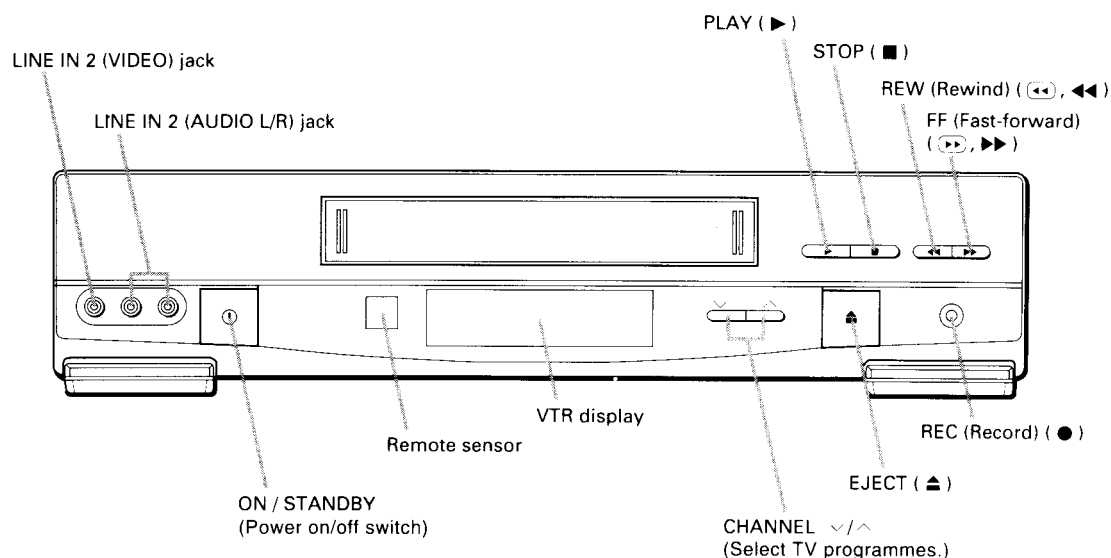
# SECTION 1 GENERAL DESCRIPTIONS

OPERATING INSTRUCTIONS (V-703T)

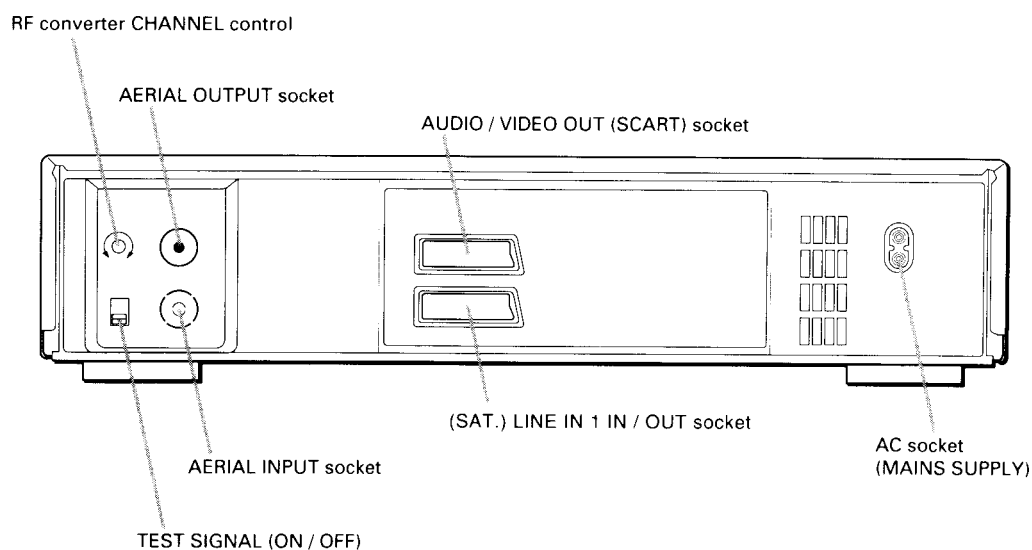


## IDENTIFICATION OF CONTROLS

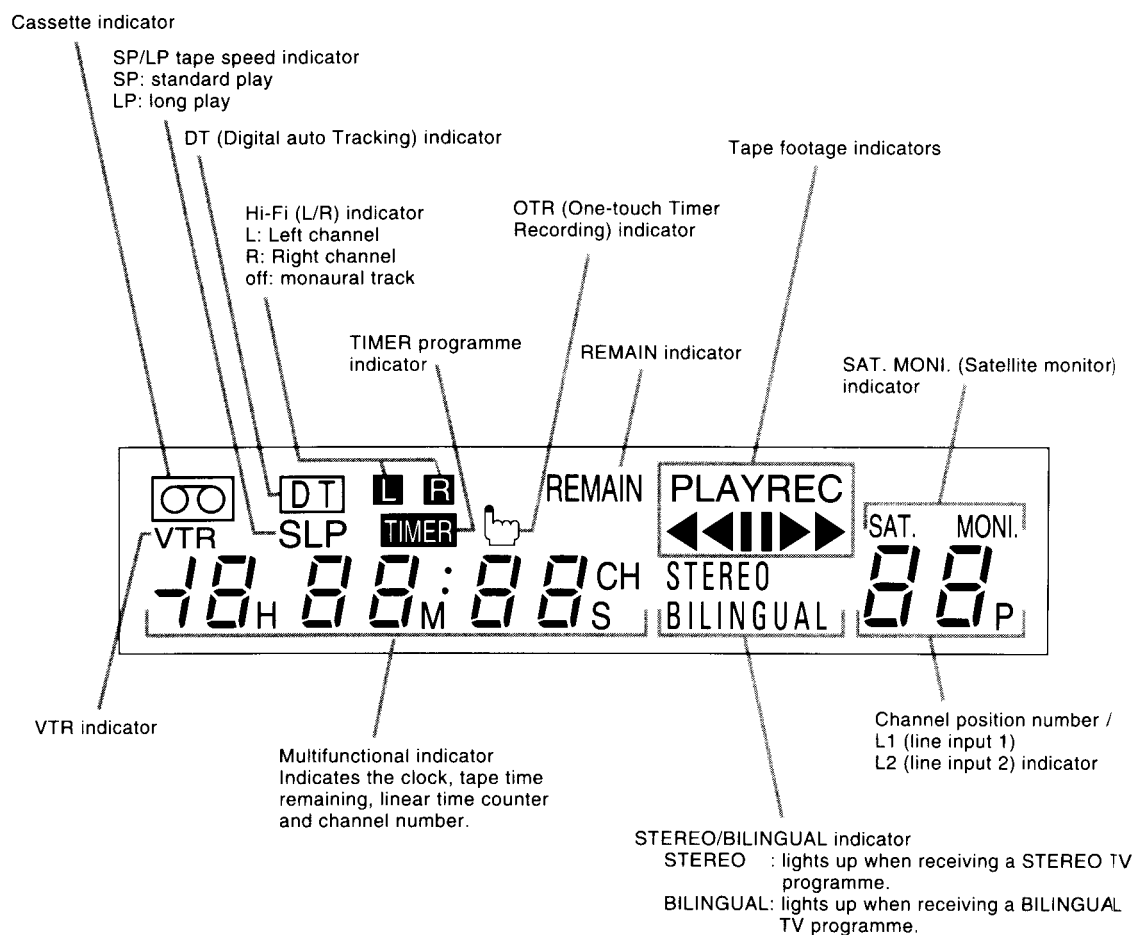
### Front Panel



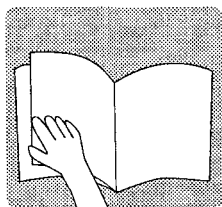
### Rear Panel



## VTR Display

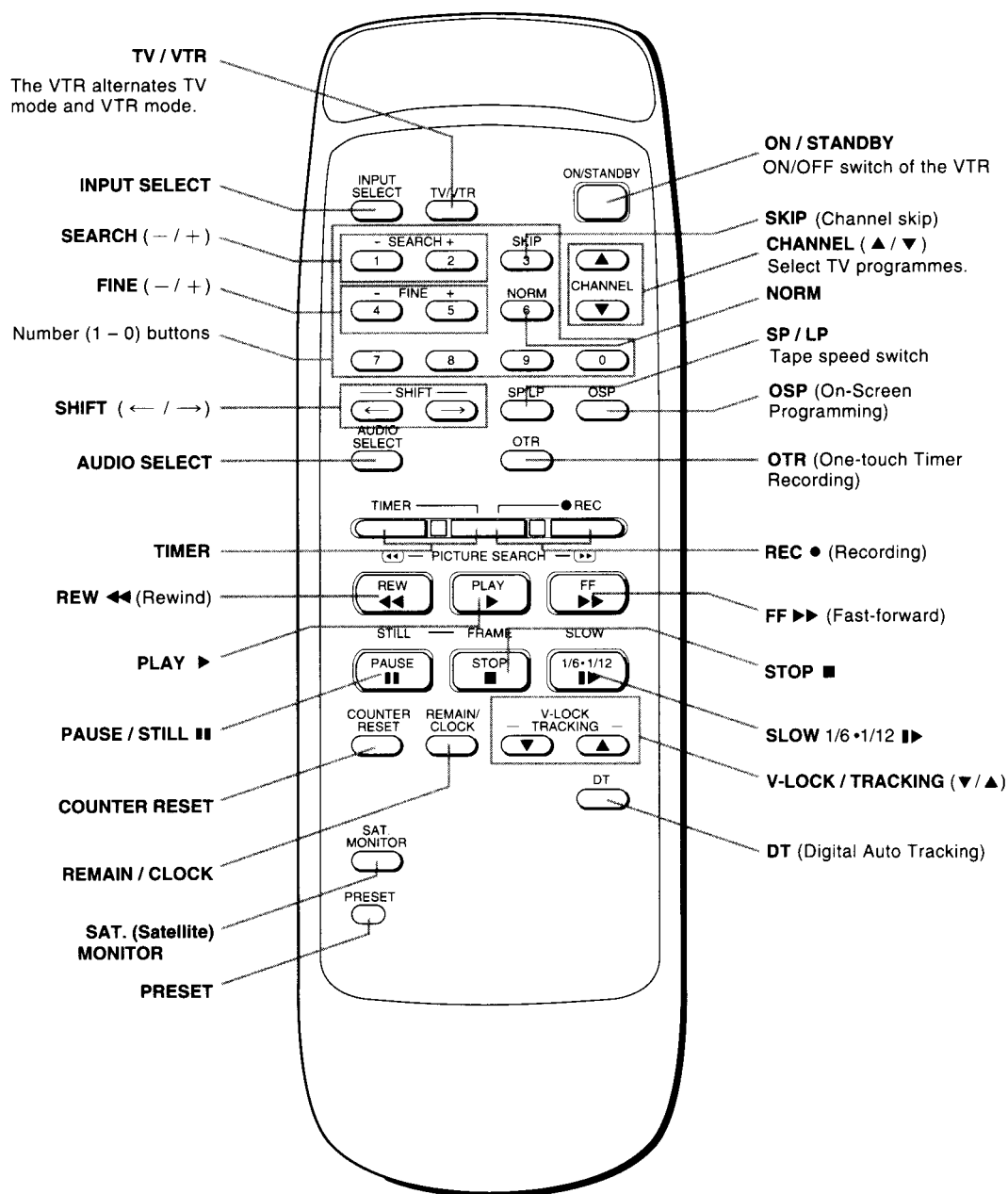


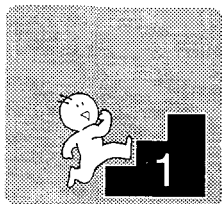




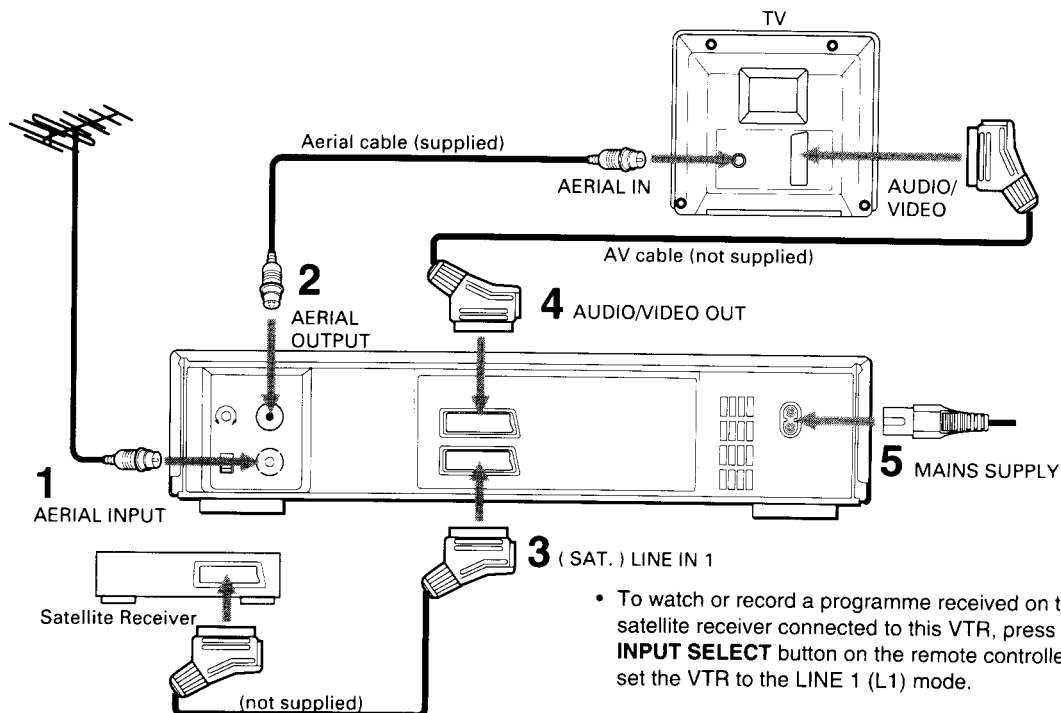
## IDENTIFICATION OF CONTROLS

### Remote Controller

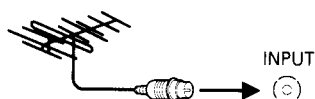




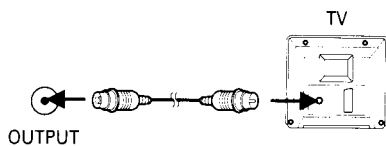
# CONNECTION TO A SATELLITE RECEIVER



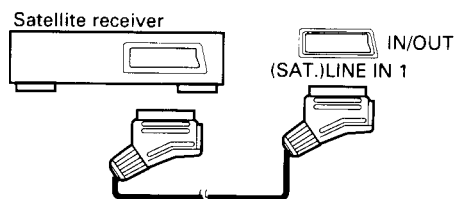
- 1 Connect the main antenna aerial to the **AERIAL INPUT** socket on the VTR.



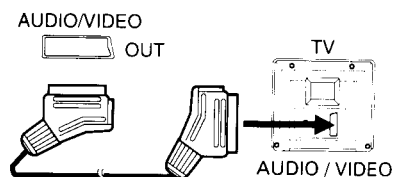
- 2 Connect the **AERIAL OUTPUT** socket on the VTR to the TV using the supplied aerial cable.



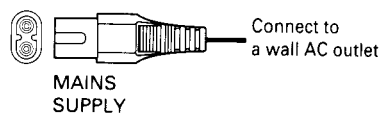
- 3 Connect the satellite receiver and the VTR via the **(SAT.) LINE IN 1** socket on the VTR using an AV cable (not supplied).



- 4 Connect the **AUDIO/VIDEO OUT** (SCART) socket on the VTR to the audio/video (SCART) socket of the TV using an AV cable with SCART connectors (not supplied).

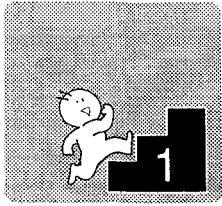


- 5 Connect the supplied power cable to the AC socket (**MAINS SUPPLY**) of the VTR.



**To watch the playback signal when the VTR is connected in this way**

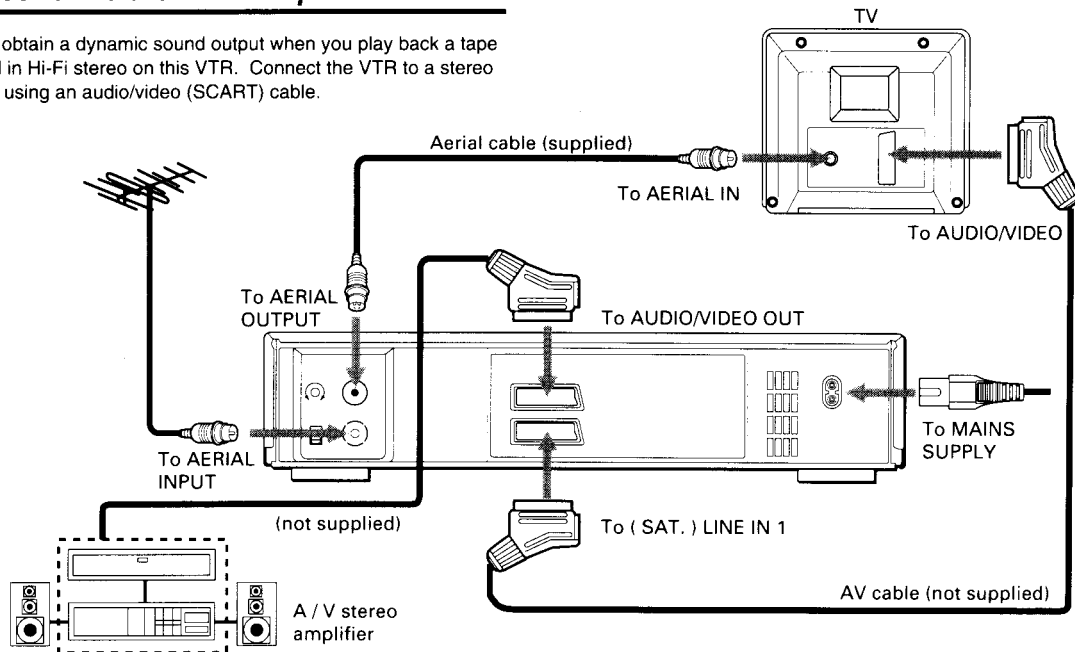
Set the TV to the video input mode using the input select switch on the TV.



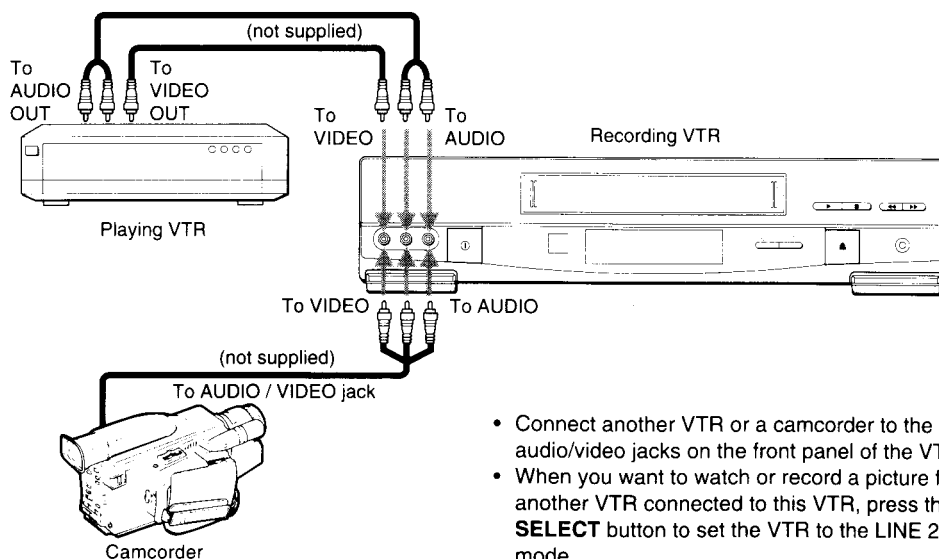
## ADDITIONAL CONNECTIONS

### Connection to a Stereo Amplifier

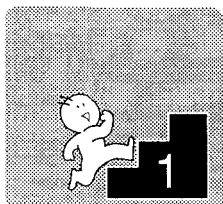
You can obtain a dynamic sound output when you play back a tape recorded in Hi-Fi stereo on this VTR. Connect the VTR to a stereo amplifier using an audio/video (SCART) cable.



### Connection to Other VTR Using the LINE IN 2 Audio/Video Jacks (Phono Type)



- Connect another VTR or a camcorder to the LINE IN 2 audio/video jacks on the front panel of the VTR.
- When you want to watch or record a picture from another VTR connected to this VTR, press the **INPUT SELECT** button to set the VTR to the LINE 2 (L2) mode.
- If the connected equipment is monaural (has one audio output jack), connect to the L/MONO side of the AUDIO jacks on this VTR.

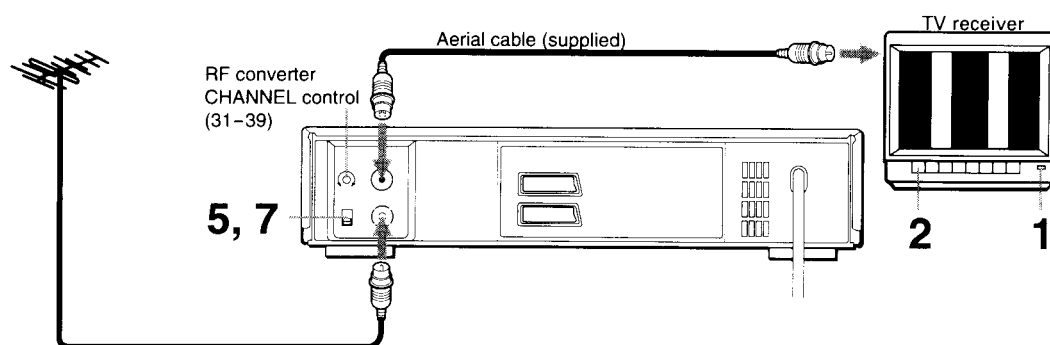


# TUNING THE TV TO THE VIDEO CHANNEL

## Important

The following adjustment is necessary when the VTR is connected to the TV via the AERIAL OUTPUT socket only.

The VTR converts the received signals into the type of output signals used in TV broadcasts, and sends them to your TV from the AERIAL OUTPUT socket. Your television must have a channel set aside exclusively for these VTR signals. This is called the video channel.



## Setting a Video Channel on Your TV

- 1 Turn on the power of the TV.
- 2 Select the TV to a free station number which you wish to use for your video playback using the station selector on the TV.



Station selector on the TV

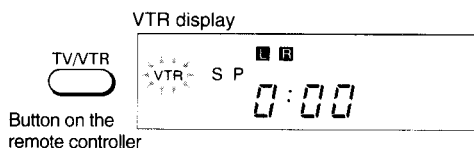
For example, select station 5 for the station number. This station 5 will be only used for watching a VTR picture.

- 3 Press the **ON/STANDBY** button to turn on the VTR.



Button on the front panel of the VTR

- 4 Press the **TV/VTR** button on the remote controller so that the VTR indicator appears in the VTR display.



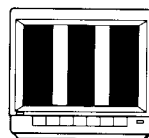
Button on the remote controller

- 5 Set the **TEST SIGNAL** switch at the back of the VTR to ON.



TEST SIGNAL

- 6 Tune the TV so that the TV station selected in step 2 (ex. station 5) tunes in to the video channel of the VTR. Tune the TV to around UHF channel 36 so that the clear two-striped test pattern display appears on the TV screen. (For tuning the TV, refer to the TV's Owner's Manual.)



- 7 Set the **TEST SIGNAL** switch to OFF.



TEST SIGNAL

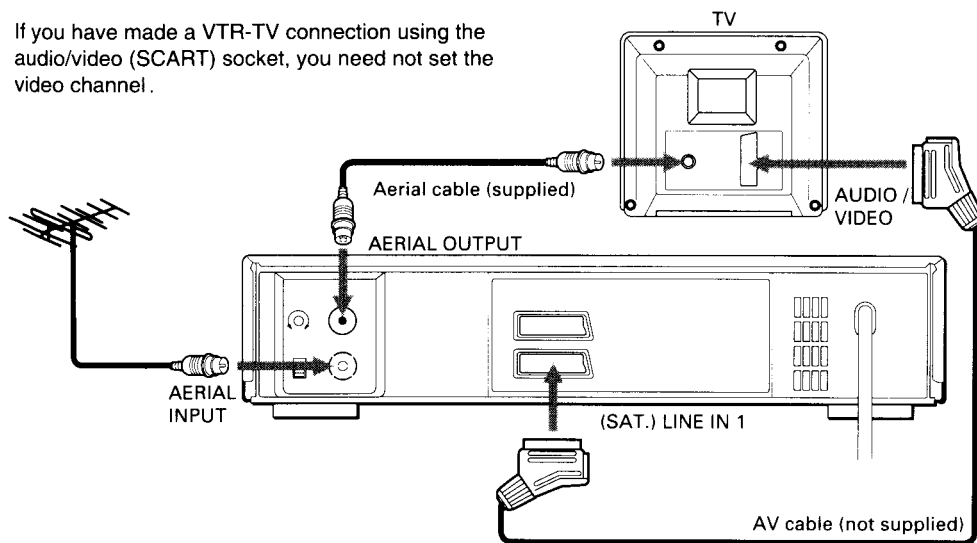
Video channel setting is now complete.

The station number selected in step 2 (ex. station 5) can be used as the video channel of this VTR.

**Accordingly, you must set the TV channel to station 5 when you use the VTR.**

## When the VTR is Connected to Your TV Using the Audio/Video (SCART) Socket

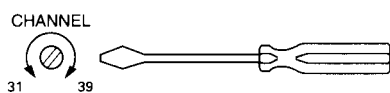
If you have made a VTR-TV connection using the audio/video (SCART) socket, you need not set the video channel.



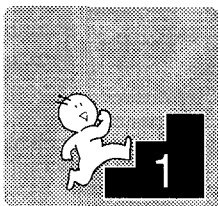
**To watch the playback picture when the VTR is connected in this way**  
Set the TV to the video input mode using the input select switch on the TV. For setting the video input mode, refer to the Owner's Manual of the TV you are using.

## When a picture is not clearly visible because of interference on the selected video channel.

The test pattern signal is transmitted on channel 36 of the TV broadcasting channels. If you are encountering interference from another broadcast on the video channel, you may readjust to a free channel by using the RF converter CHANNEL control.



After having readjusted the RF converter CHANNEL control, follow steps 5 to 7 to re-tune the TV.



# PRESETTING THE TV STATION ON THE VTR

## Introduction

To watch and record TV programmes, it is necessary to preset the transmission channel numbers of the local TV stations on the position numbers in the VTR memory. This VTR can preset up to 48 positions for TV broadcasting stations.

## Receivable channels

The receivable channels are shown in the table below. The channels are classified by the two tuning ranges on this VTR. Select the correct tuning range number in the VTR display. The transmission channels numbers in the parentheses are indicated in the VTR display.

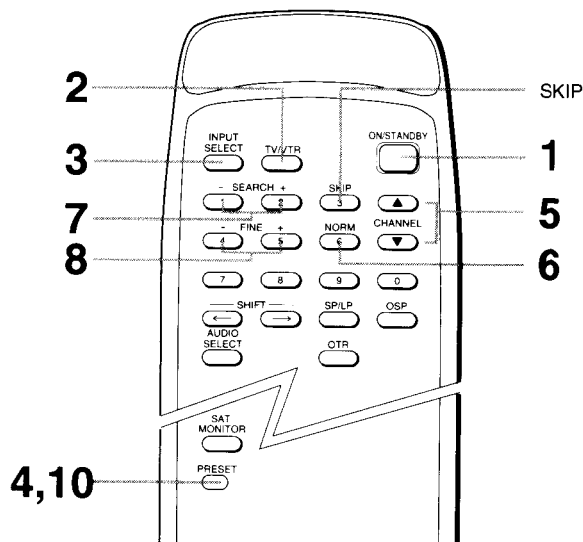
Tuning range number	Band	Transmission channel number
1	VHF UHF CATV	E02 - E12 (02 - 12) A - H, H1, H2 (13 - 20, 11, 12) E21 - E69 (21 - 69) X - Z (74 - 76)
2	CATV	S01 - S41 (01 - 41)



VTR display

## Preparation

Select the video channel on the TV or set the TV's input mode selector to the video input mode depending on the TV connection method.

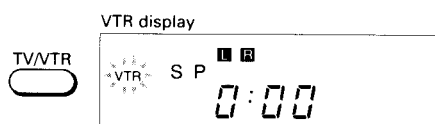


**Example:** to preset a UHF station with transmission channel number 26 to position number 1.

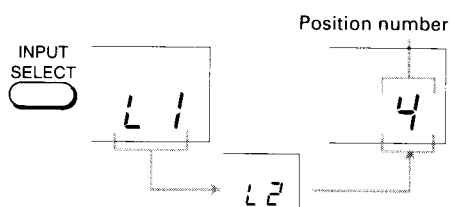
- 1 Press the **ON/STANDBY** button to turn the VTR on.



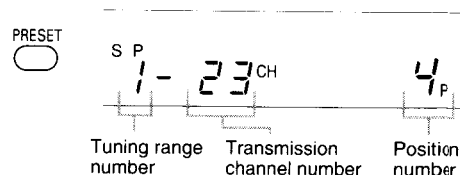
- 2 Press the **TV/VTR** button so that the VTR indicator appears in the VTR display.



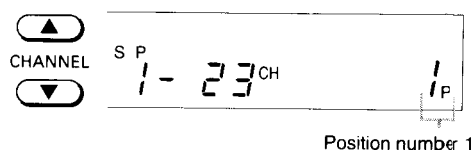
- 3 If the "L1" or "L2" indicator appears in the VTR display, press the **INPUT SELECT** button so that a position number appears.



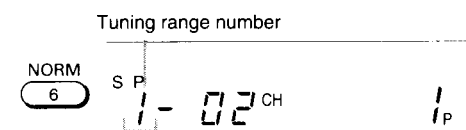
- 4 Press the **PRESET** button. The VTR enters the presetting mode. The VTR display indicates the tuning range number, the transmission channel number of a TV station and position number.



- 5 Press the **CHANNEL** (▲/▼) button to select the position number on which you want to preset a TV station. Select position number 1 for this example.

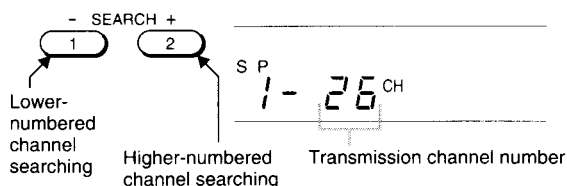


- 6** Press the **NORM** button to select a tuning range number.  
Each time you press the button, the number alternates between 1 and 2. Select the tuning range number 1 for this example.



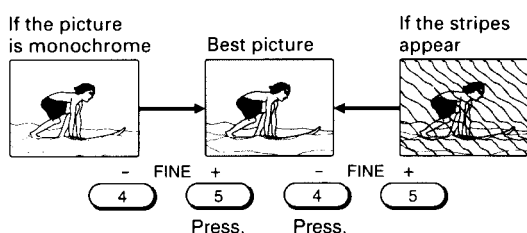
Tuning range number 1: VHF (A – H2)  
(E02 – E12)  
UHF (E21 – E69)  
CATV (X – Z)  
2: CATV (S01 – S41)

- 7** Press the **SEARCH** (-/+) buttons to search for a TV station you want to preset.  
Search for transmission channel number 26 for this example.



- If the received TV station signal is tuned in, searching stops automatically. Press the **SEARCH** (-/+) buttons to restart channel search operation.

- 8** If a clear picture does not appear on the TV screen after searching is finished, make fine adjustment with the **FINE** (-/+) buttons.



- 9** Repeat steps 5 to 8 for other TV stations.

- 10** Press the **PRESET** button.  
Channel presetting is now complete.



The VTR display returns to the previous mode.

## Skipping Channels

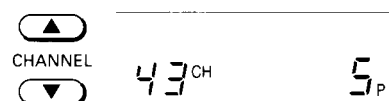
You can skip unnecessary position numbers when you select the TV stations with the **CHANNEL** (▲/▼) buttons.

- 1) Press the **PRESET** button.  
The VTR enters the presetting mode.



- 2) Select the position number you want to skip with the **CHANNEL** (▲/▼) buttons.

**Example:** to skip position number 5.



- 3) Press the **SKIP** button.  
The following indication will appear in the VTR display with the skip function on or off.



Channel skip off

43 CH

5 P

Channel skip on

-- CH

5 P

If you press the **SKIP** button again, the transmission channel number will appear and the skip function will be cancelled.

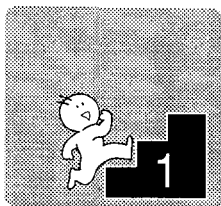
- 4) Press the **PRESET** button.  
Channel skipping is now engaged.

### To cancel channel skipping

Follow steps 1) to 4) above.

### Note

You can switch the skip function on/off only when the TV stations have been preset. It is not possible during auto search.



# SETTING THE CLOCK

## Introduction

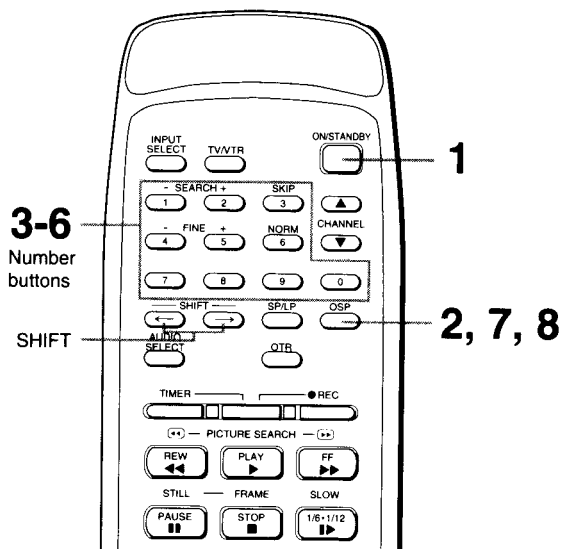
When the VTR is first connected to the AC socket, or after a power failure of more than approximate 30 minutes, 0:00 blinks in the VTR display and it is necessary to set the clock. You can set the clock using the TV screen.

## Preparation

Select the video channel on the TV or set the TV's input mode selector to the video input mode depending on the TV connection method.

## Hints on setting

The item to be set will blink. Set the data with the number buttons, following the blinking position. You can change the blinking position by pressing the SHIFT (←/→) buttons.



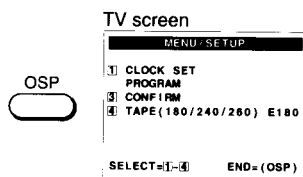
## Clock Setting Procedure

**Example:** to set the clock to 15:30 on July 5, 1993.

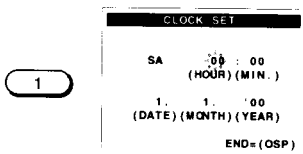
- 1 Press the **ON/STANDBY** button to turn the VTR on.



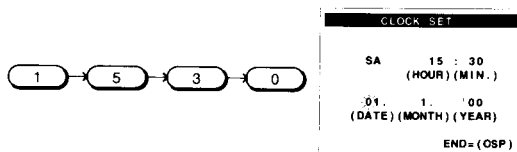
- 2 Press the **OSP** button. The MENU/SETUP screen will appear on the TV screen.



- 3 Press **number button 1** to select the CLOCK SET screen.



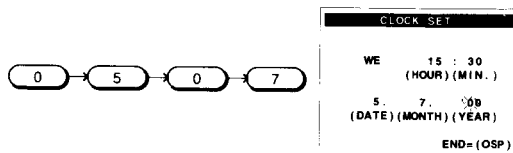
- 4 Set the hours and minutes. Press **number buttons 1, 5, 3 and 0**.



### Correcting a mistake:

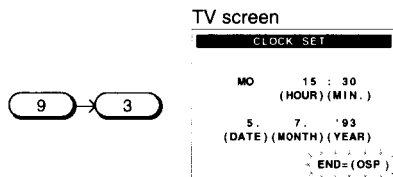
Press the **SHIFT** (←) button repeatedly until the number you set incorrectly blinks. Press the correct number button and then press the **SHIFT** (→) button to return to the previous digit.

- 5 Set the day and month. Press **number buttons 0, 5, 0 and 7**.

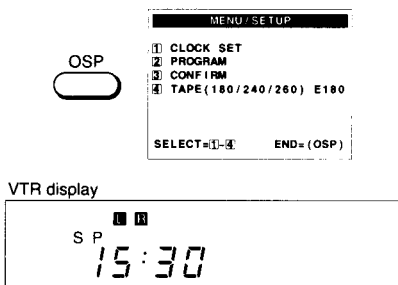




- 6** Set the year.  
Press **number buttons 9 and 3** (last two digits of the year).



- 7** Press the **OSP** button.  
Now the clock starts.



- 8** Press the **OSP** button to return to the normal TV screen.

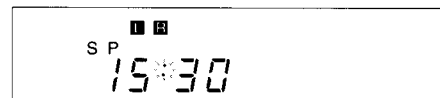
#### Notes

- It is not possible to set the clock in the timer recording or the timer standby mode.
- If you input irregular clock data such as February 29, 1993, it will not be accepted.
- The built-in calendar of the VTR is valid from 1990 to 2089.

### ***Resetting the VTR Clock***

If a power failure of short duration has occurred, the colon between the hour and minutes digits in the VTR display blinks.

The time displayed may be incorrect.



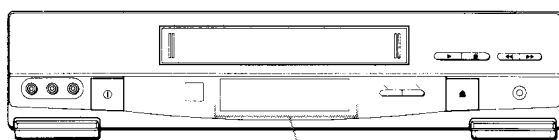
In this case, the VTR clock needs to be reset. Follow the "Clock Setting Procedure".



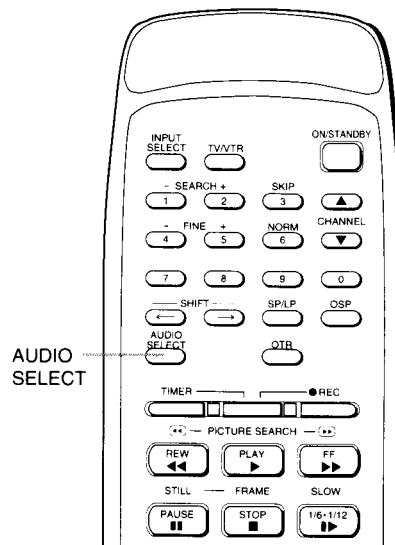
# STEREO/BILINGUAL TV PROGRAMMES AND SOUND OUTPUT

## STEREO/BILINGUAL TV programmes

This VTR receives STEREO TV programmes and BILINGUAL TV programmes. The STEREO and BILINGUAL TV programmes will be recorded on Hi-Fi sound track.



VTR display



AUDIO SELECT

## Indicators Lit in the VTR Display When a STEREO/BILINGUAL TV Programme is Received

When a STEREO or BILINGUAL TV programme is received, the STEREO or BILINGUAL indicator lights as shown in the table below.

	VTR display
STEREO TV programme received	STEREO indicator lit
BILINGUAL TV programme received	BILINGUAL indicator lit
Normal TV programme received	not lit

## Monitoring Sound Output

When monitoring a TV programme or playing back a Hi-Fi recorded video tape, press the **AUDIO SELECT** button to select a desired sound output. Following is a list of monitoring cases when the VTR is connected to a stereo system or stereo TV. As the **AUDIO SELECT** button is pressed, the sound output and the indicator change as below:

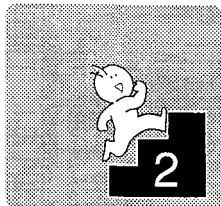
Sound type	STEREO programmes	BILINGUAL programmes	Normal TV programmes
VTR display			
	Heard in stereo. (left channel and right channel)	Channel 1 (MAIN) heard from the left speaker, Channel 2 (SUB) from the right speaker.	Heard in monaural.
	Left channel heard from both the left and right speakers.	Channel 1 (MAIN) heard from both the left and right speakers.	Heard in monaural.
	Right channel heard from both the left and right speakers.	Channel 2 (SUB) heard from both the left and right speakers.	Heard in monaural.
	Both L and R go off.	Channel 1 (MAIN) heard from both the left and right speakers.	Heard in monaural.

## Sounds of a recorded TV programme

This VTR is capable of recording sound in Hi-Fi mode. Accordingly, STEREO TV programmes and BILINGUAL TV programmes are recorded in its original sound system. (See the above list.)

### Notes

- When listening to a STEREO TV programme or playing back a tape Hi-Fi recorded in stereo, you have to connect the VTR with the stereo audio system or the stereo TV. The sound which is output from the AERIAL OUTPUT socket is monaural.
- If a cassette which is not Hi-Fi recorded is played back, [L] and [R] indicators go off automatically and the sound output is monaural.



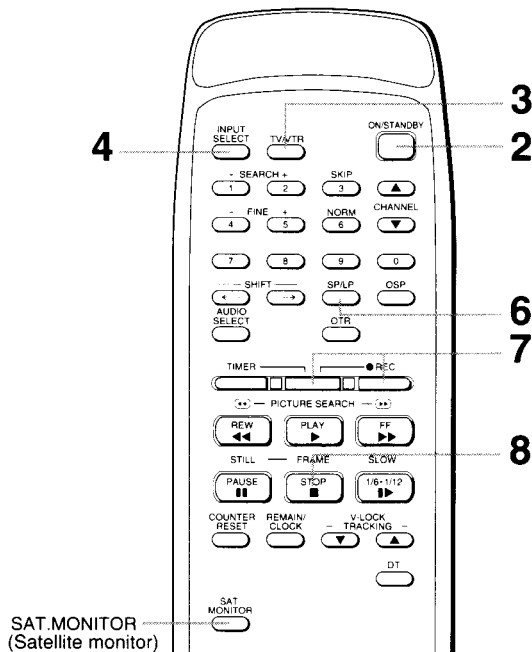
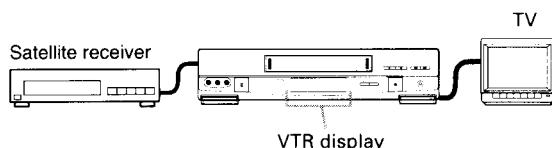
# RECORDING A PROGRAMME FROM A CONNECTED SATELLITE RECEIVER

## Introduction

If you are using a satellite receiver, you can connect it to this VTR to record a satellite programme.

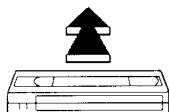
## Preparation

Select the video channel on the TV or set the TV's input selector to the video input mode depending on the TV connection method.

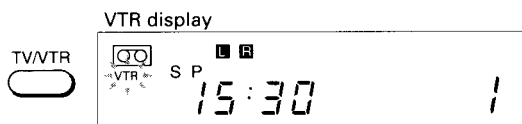


1 Turn on the connected satellite receiver.

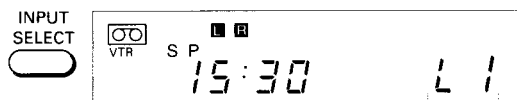
2 Load a cassette with the safety tab attached or press the **ON/STANDBY** button if a cassette is loaded.



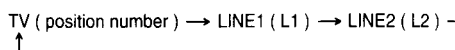
3 Press the **TV/VTR** button so that the VTR indicator will appear in the VTR display.



4 Press the **INPUT SELECT** button so that "L1" will appear in the position number area.



Each time you press the **INPUT SELECT** button, the display changes as shown below.

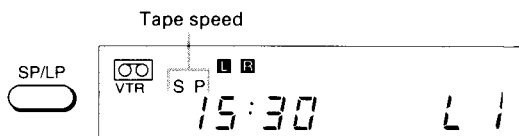


5 Choose the satellite programme you want to record using the station selector on the connected satellite receiver.

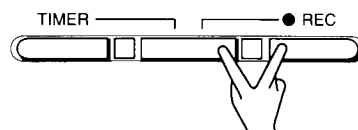


Make sure that selected programme is on the TV screen.

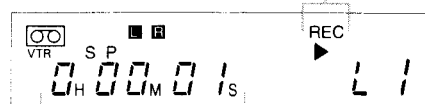
6 Press the **SP/LP** button to select the recording tape speed: SP (standard play) or LP (long play).



7 Press the **REC** button on the VTR, or simultaneously press the two **REC** buttons on the remote controller. Recording begins.



Recording indicator

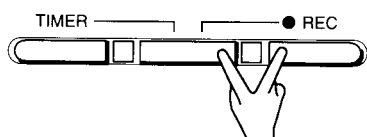


Linear time counter

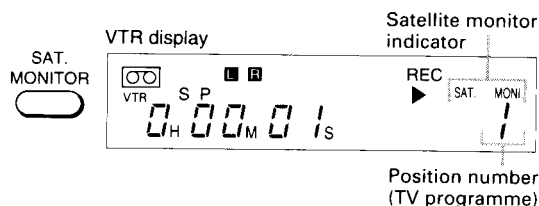
8 Press the **STOP** button when recording is finished.

### ■ Monitoring a satellite programme while recording a TV programme (Satellite Monitor Function)

- 1) Follow steps 1 to 5 of "RECORDING A TV PROGRAMME" and record a TV programme.

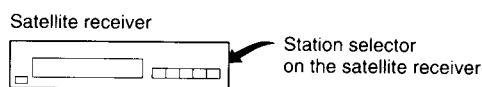


- 2) Press the **SAT. MONITOR** button. The SAT. MONI. indicator appears.



Each time you press the **SAT. MONITOR** button, the SAT. MONI. indicator goes on and off alternately.

- 3) Choose the satellite programme you want to watch using the station selector on the connected satellite receiver.

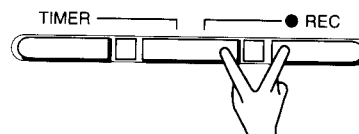


#### Notes on the satellite monitor function

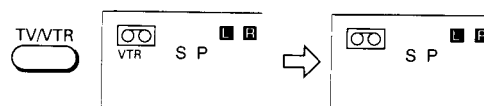
- When you operate the satellite monitor, make sure that the TV is connected to the VTR using the AUDIO/VIDEO (SCART) socket and set the TV's input selector to the video input mode.
- The satellite monitor function is also available in the timer recording standby mode, in the timer recording mode or the one-touch timer recording mode.
- The satellite monitor function is deactivated in the following cases:
  - 1) When recording has been stopped.
  - 2) When recording has been paused.
  - 3) When OSP mode (ex. the MENU/SETUP screen is displayed) is set.

### ■ Monitoring a TV programme while recording a satellite programme

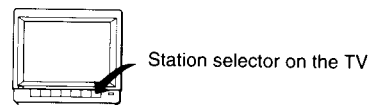
- 1) Follow steps 1 to 7 of "RECORDING A PROGRAMME FROM A CONNECTED SATELLITE RECEIVER", and record a satellite programme.



- 2) Press the **TV/VTR** button so that the VTR indicator disappears in the VTR display.



- 3) Choose a TV programme you want to watch while recording a satellite programme, using the station selector on the TV.

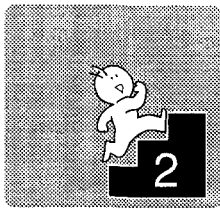


### ■ Watching a satellite programme while the VTR is in the standby (power off) mode

- 1) Press the **SAT. MONITOR** button so that the SAT. MONI. indicator appears in the VTR display.
- 2) Choose a satellite programme you want to watch using the station selector on the connected satellite receiver.

#### Notes

- If you turn on the VTR while watching a satellite programme in the standby mode, the picture disappears from the TV screen.
- Keep the power cable of the VTR connected to a wall AC outlet.



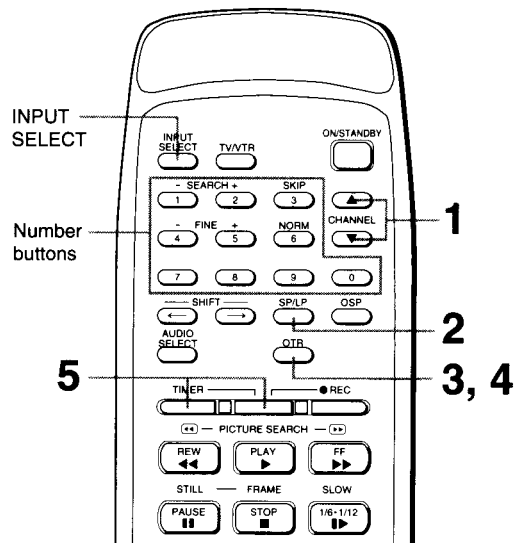
# ONE-TOUCH TIMER RECORDING (OTR)

## Introduction

Using the OTR (One-touch Timer Recording) function, you can start recording immediately and stop recording and turn the VTR off at a desired time within 8 hours in 30-minute increments.

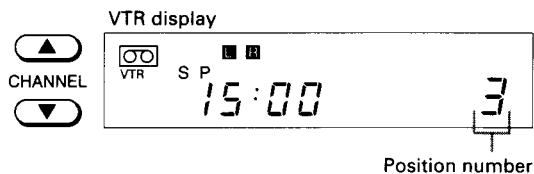
## Preparation

- Confirm that the clock time is correct.
- Load a cassette with the safety tab attached.  
(Press the ON/STANDBY button if the power is off with a cassette loaded.)

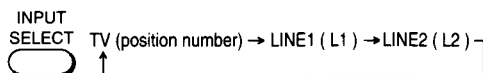


**Example:** to record a programme of a station preset on position 3 in the SP mode from now (15:00) until 16:00.

- 1 Select the position number on which the desired TV station is preset using the **CHANNEL** (▲/▼) buttons or **number buttons**.

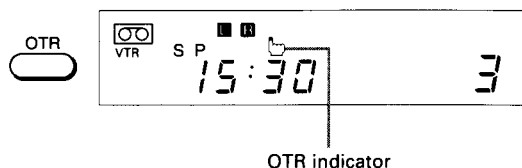


- When you want to record sources from the connected satellite receiver or other VTRs using the OTR function, press the **INPUT SELECT** button to set the LINE input mode.

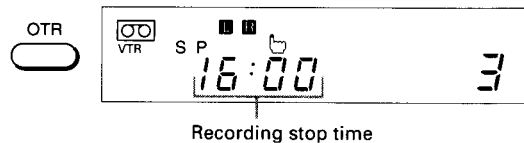


- 2 Press the **SP/LP** button to select the SP mode.

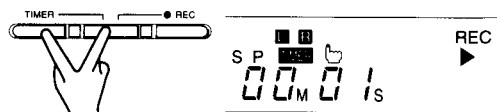
- 3 Press the **OTR** button.  
The VTR enters the OTR mode and adds 30 minutes.

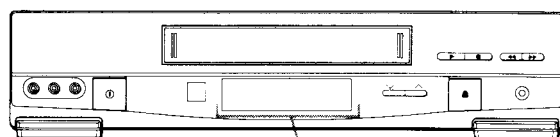


- 4 Within 10 seconds, press the **OTR** button to set the recording stop time.  
Each time you press the **OTR** button, the recording stop time changes in 30-minute increments.



- 5 Within 10 seconds, press the two **TIMER** buttons simultaneously.  
One-touch timer recording begins.





VTR display

■ **To set One-Touch Timer Recording during recording**

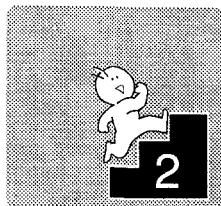
Even when you are recording a TV programme or a programme source from equipment connected to this VTR, you can perform one-touch timer recording. In this case, follow the operating procedure from step 3.

**To cancel the one-touch timer recording in progress**

Press the two **TIMER** buttons simultaneously (not the STOP button).

**Notes**

- In the OTR mode, the VTR automatically switches off at the recording stop time. If timer programme recording also has been preset, the VTR automatically enters the timer standby mode at the recording stop time.
- In the case where a programmed timer recording is set to start before a one-touch timer recording ends, the one-touch timer recording has priority and will continue (i.e., the programmed timer recording will not start.).



# PROGRAMMABLE TIMER RECORDING

## Introduction

The programmable timer allows you to record up to 8 different programmes over one year. This function is convenient when you are away from home or when you are busy.

## Hints on setting

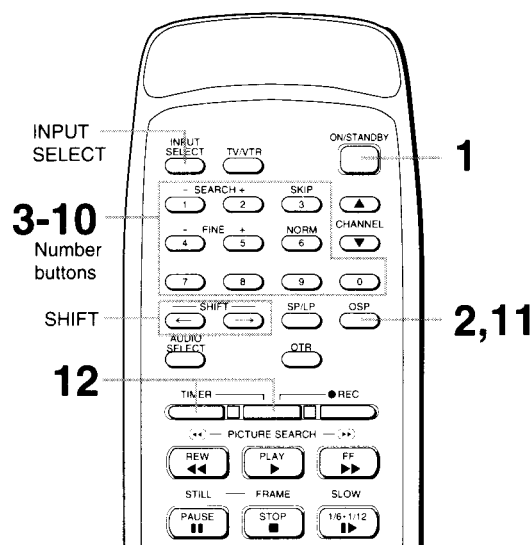
The item to be set blinks. Set the data with the number buttons, following the blinking position. You can change the blinking position by pressing the SHIFT (←/→) buttons.

## Preparation

- Select the video channel on the TV or set the TV's input selector to the video input mode depending on the TV connection method.
- Confirm that the clock time is correct.

## AUTO SPEED ADJUST

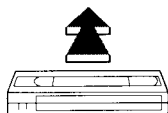
If the tape length is not long enough for timer recording in the SP mode, the VTR automatically changes the tape speed to the LP mode.



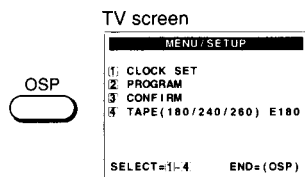
## Setting the Timer Programme

**Example:** to record a programme of the station with transmission channel number 26 preset on position number 1 in the SP mode from 20:30 until 21:30 on July 8. Today is July 5.

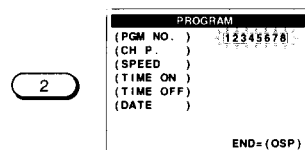
- 1 Load a cassette with the safety tab attached or press the **ON/STANDBY** button if a cassette is loaded.



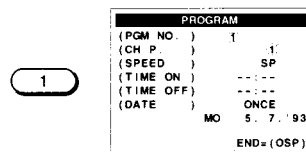
- 2 Press the **OSP** button. The MENU/SETUP screen appears on the TV screen.



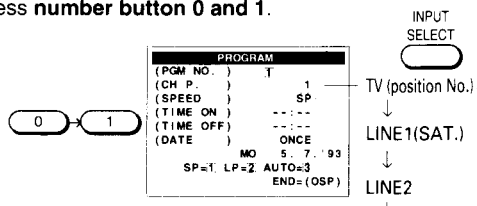
- 3 Press **number button 2**. The PROGRAM screen appears on the TV screen.



- 4 Select programme number 1. Press **number button 1**.



- 5 Select position number 1. Press **number button 0 and 1**.



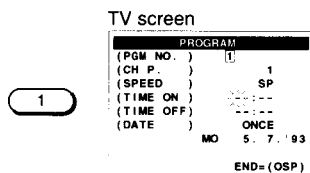
You can make a timer recording of a source programme from other equipment connected to this VTR using the **INPUT SELECT** button.

- LINE 1 (SAT.) : to record from a connected satellite receiver.
- LINE 2 : to record from other equipment connected to the AUDIO/VIDEO jacks (phono type) on the front panel of this VTR.

## Correcting a mistake:

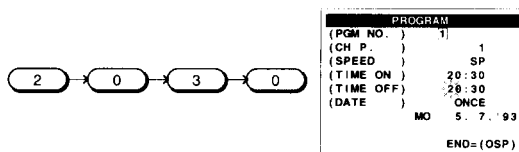
Press the SHIFT (←) button to reverse the blinking position until the number you set incorrectly blinks. Correct the number with the number buttons and press the SHIFT (→) button to return the blinking digit.

- 6** Press **number button 1** to select the tape speed SP.

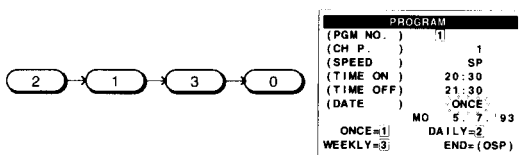


- SP : Select for a recording with better picture and sound.
- LP : Select for doubling recording time, but with less picture quality and sound than using the SP mode.
- AUTO : Select when you use the AUTO SPEED ADJUST.  
(See "AUTO SPEED ADJUST" on the right column of this page.)

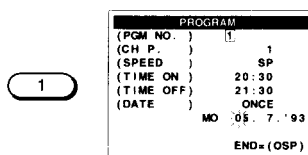
- 7** To set the hours and minutes of the recording start time (TIME ON), press **number button 2, 0, 3 and 0**.



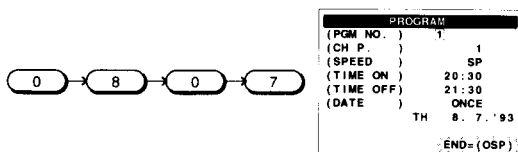
- 8** To set the hours and minutes of recording end time (TIME OFF), press **number button 2, 1, 3 and 0**.



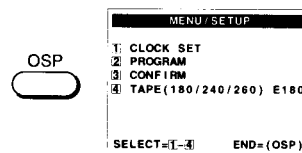
- 9** To select a ONCE programme, press **number button 1**. You can also set daily and weekly timer recordings.



- 10** To set the recording date (month and day), press **number buttons 0, 8, 0 and 7**.

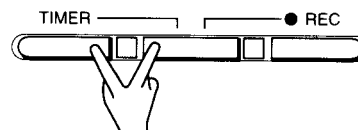


- 11** Press the **OSP** button. Programme setting is complete.



When you set the timer recording for other programmes, follow steps 3 to 11. (For this example, since programme number 1 is already used, preset another programme using programme numbers 2, 3 . . . 8 in step 4.)

- 12** Press the two **TIMER** buttons simultaneously.



The power will be turned off and the VTR enter the timer standby mode.

VTR display



## AUTO SPEED ADJUST

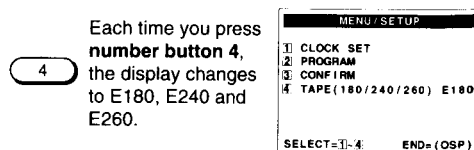
If the tape length is not long enough for timer recording in the SP mode, set the recording speed to AUTO at step 6.

Recording starts in the SP mode and the VTR automatically selects the tape speed to record the programme to the end. If the tape length is not long enough, the tape speed automatically changes from the SP mode to the LP mode.

## Notes

- Make sure to select TAPE 180, 240 or 260 from MENU/SETUP screen according to the tape used.

Each time you press **number button 4**, the display changes to E180, E240 and E260.



E180: when using an E-180 tape or shorter.

E240: when using an E-210 or E-240 tape.

E260: when using an E-260 tape.

- When the LP mode is selected and the tape length is not sufficient to record the programme to the end, the programme cannot be completely recorded.
- The image will be distorted when playing back the part where the recording mode was switched from the SP mode to the LP mode with the AUTO SPEED ADJUST method.





## PROGRAMMABLE TIMER RECORDING

### Daily and Weekly Timer Recording

#### Daily timer recording

You can record TV programmes on the same TV station at the same hour Monday through Friday.

- 1) In step 9, press **number button 2** to select DAILY.

2

- 2) Skip step 10.
- 3) Perform steps 11 and 12.

#### Weekly timer recording

You can record TV programmes on the same TV station on the same day every week.

- 1) In step 9, press **number button 3** to select WEEKLY.

TV screen

PROGRAM	
(PGM NO.)	1
(CH P.)	1
(SPEED)	SP
(TIME ON)	20:30
(TIME OFF)	21:30
(DATE)	WEEKLY
SU=1	MO=2
TU=3	WE=4
TH=5	FR=6
SA=7	END=(OSP)

3

- 2) Press **number buttons 1 to 7** to select the day of the week.  
For example, If you press **number button 2** to select "MO", you can record the programme on the same TV station on the same time every Monday.

Example  
2

PROGRAM	
(PGM NO.)	1
(CH P.)	1
(SPEED)	SP
(TIME ON)	20:30
(TIME OFF)	21:30
(DATE)	WEEKLY
	MO
	END=(OSP)

- 3) Skip step 10.
- 4) Perform steps 11 and 12.

### Confirming the Timer Programmes

#### To confirm before the VTR enters the timer standby mode ( **TIMER** indicator not lit)

- 1) Press the **OSP** button so that the MENU/SETUP screen appears.

OSP

MENU/SETUP	
1	CLOCK SET
2	PROGRAM
3	CONFIRM
4	TAPE (180/240/260) E180
SELECT=1-4	END=(OSP)

- 2) Press **number button 3** to select CONFIRM.

3

CONFIRM	
1	1 8/7 20:30-21:30 SP
2	
3	
4	
5	
6	
7	
8	
CLEAR=1-8	END=(OSP)

- 3) Press the **OSP** button again when you finish confirming.

#### To confirm during the timer recording or the timer standby mode ( **TIMER** indicator lit)

Press the **OSP** button so that the "CONFIRM" screen display appears on the TV screen. After about one minute, the screen display disappears.

### Changing the Timer Programmes

#### Preparation

If the VTR is set to the timer standby mode ( **TIMER** indicator lit), press the **TIMER** buttons to release it and press the **ON/STANDBY** button.

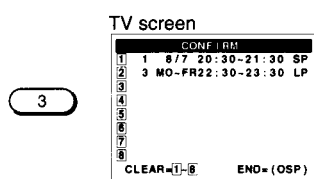
- 1) Press the **OSP** button to display the MENU/SETUP screen.
- 2) Perform steps 3 to 11 of "Setting the Timer Programme", to correct timer programme data.
  - In step 4, select a programme number which you want to correct.
- 3) Press the **TIMER** buttons simultaneously to return the VTR to the timer standby mode.

## Cancelling the Timer Programmes

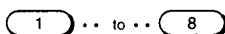
### Preparation

If the VTR is set to the timer standby mode ( **TIMER** indicator lit), press the **TIMER** buttons to release it and press the **ON/STANDBY** button.

- 1 Press the **OSP** button to display the MENU/SETUP screen.
- 2 Press **number button 3** to select CONFIRM.



- 3 Select a programme number which you want to cancel. The selected programme data are cleared.

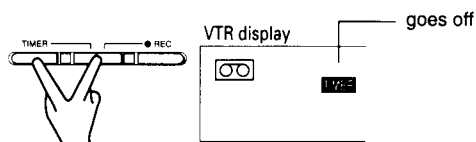


- 4 Press the **OSP** button again.
- 5 If necessary, press the **TIMER** buttons to return to the timer standby mode.

## Recording or Playback in the Timer Standby Mode

When you want to use the VTR while it is set to the timer standby mode, proceed as follows:

- 1 Press the **TIMER** buttons simultaneously. **TIMER** indicator goes off.



- 2 Press the **ON/STANDBY** button to turn on the VTR and operate the VTR as usual.
- 3 After operating the VTR, press the **TIMER** buttons again. The VTR returns to the timer standby mode.

### Note

Finish normal use of the VTR before the preset recording start time, since the timer only works when the VTR is in the timer standby mode.

## Additional Information on Timer Recording

### Error indicator

The "E" (error) indicator appears in the VTR display if you press the **TIMER** buttons when:

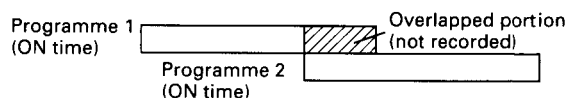
- a cassette is not loaded.
- a cassette without a safety tab is loaded.
- a cassette with a safety tab is loaded and no timer programmes are set on the VTR.

In these cases, a recording will not be made.

### Overlap of the programmes

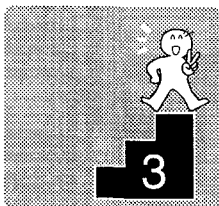
If two timer programmes overlap, the recording ON time of programme 2 has priority over the recording OFF time of programme 1.

**Example:** when programme 2 overlaps programme 1



### If a power failure occurs during timer recording

- After a power failure of short duration, the colon between the hour and minute digits blinks in the VTR display. This indicates that the timer programmes are still in the memory of the VTR.
- After a power failure of long duration (longer than approximate 30 minutes), 0:00 blinks in the VTR display. This indicates that the timer programmes have been cleared. Reset the clock and timer programmes on the VTR.

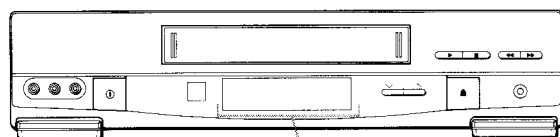


# COUNTER FUNCTION

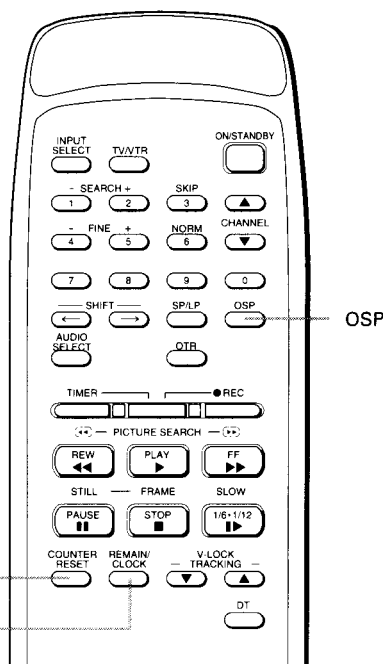
## Introduction

You can see the clock, linear tape counter or tape time remaining on the VTR display.

The **REMAIN/CLOCK** button switches the display.



VTR display



COUNTER  
RESET  
REMAIN/  
CLOCK

## Changing the Counter Display

Each time you press the **REMAIN/CLOCK** button, the display changes in sequence as follows:

Clock		REMAIN/ CLOCK
Linear time counter		REMAIN/ CLOCK
Tape time remaining		REMAIN/ CLOCK
Clock	Clock	

## To reset the linear time counter to 0H00M00S

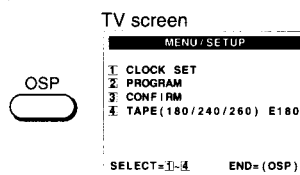
The counter is automatically reset to 0H00M00S when a cassette is ejected. If you want to reset the counter at some other point, for example, when you start a new recording, just press the **COUNTER RESET** button.

## Notes

- The linear timer counter does not work on non-recorded portions of the tape and the counter display flashes.
- When the tape is ejected or the VTR is turned off, the linear time counter changes to clock display.
- If the tape rewinds back over 0H00M00S, "—" appears in the VTR display.

## Tape Time Remaining

- Turn on the VTR and load a cassette.
- Press the **OSP** button. The MENU/SETUP screen will appear on the TV screen.



- Press **number button 4** and select a tape length, TAPE 180, 240, 260 depending on the tape to be used.

Each time you press **number button 4**, the tape length changes.

- E180: when using an E-180 tape or shorter.
- E240: when using an E-210 or E-240 tape.
- E260: when using an E-260 tape.

- Press the **REMAIN/CLOCK** button. The tape time remaining is displayed. (See the chart on the left column.)

## Notes

- The displayed time remaining is an approximate time.
- The time remaining is calculated according to the tape speed (SP or LP mode) and the cassette type.
- In the case where the time remaining is below 5 minutes, the tape time remaining display blinks.

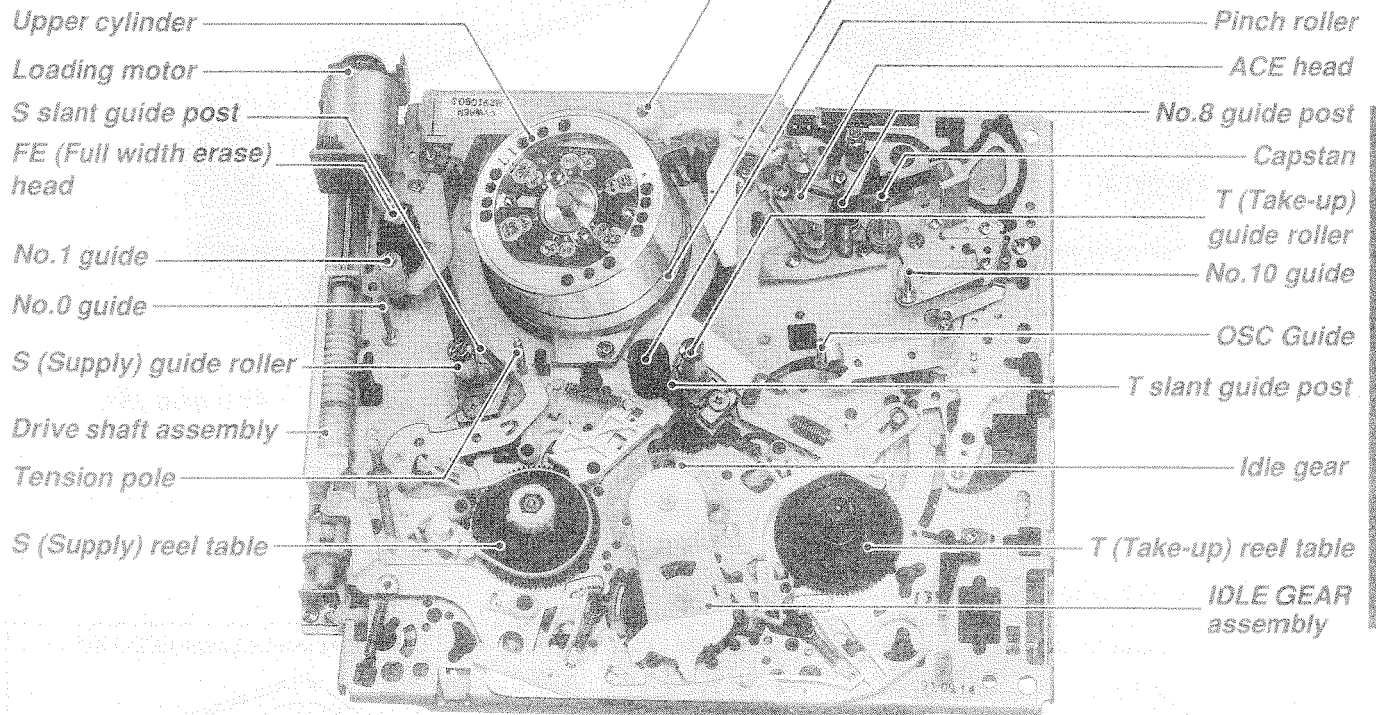
# SECTION 2

## ADJUSTMENT PROCEDURES

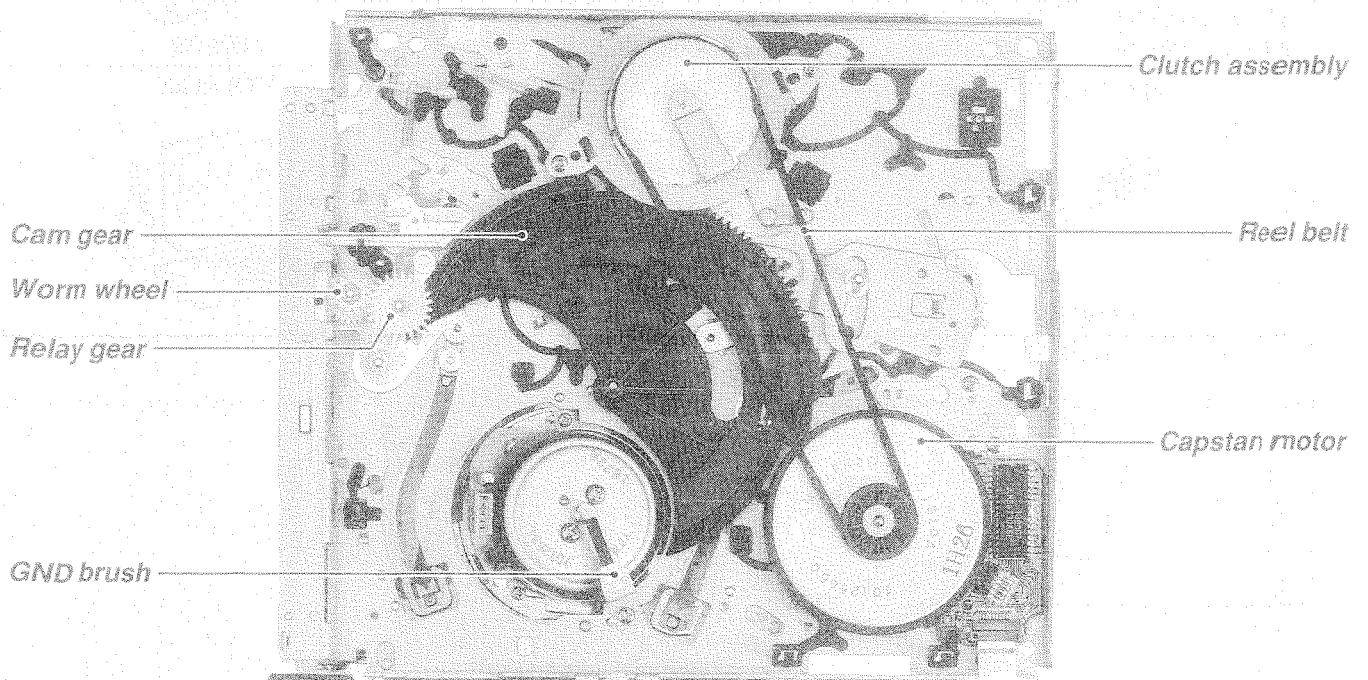
### 1. MECHANICAL ADJUSTMENT

#### 1-1. Mechanical Parts Location

##### 1-1-1. Mechanism Deck Parts Location

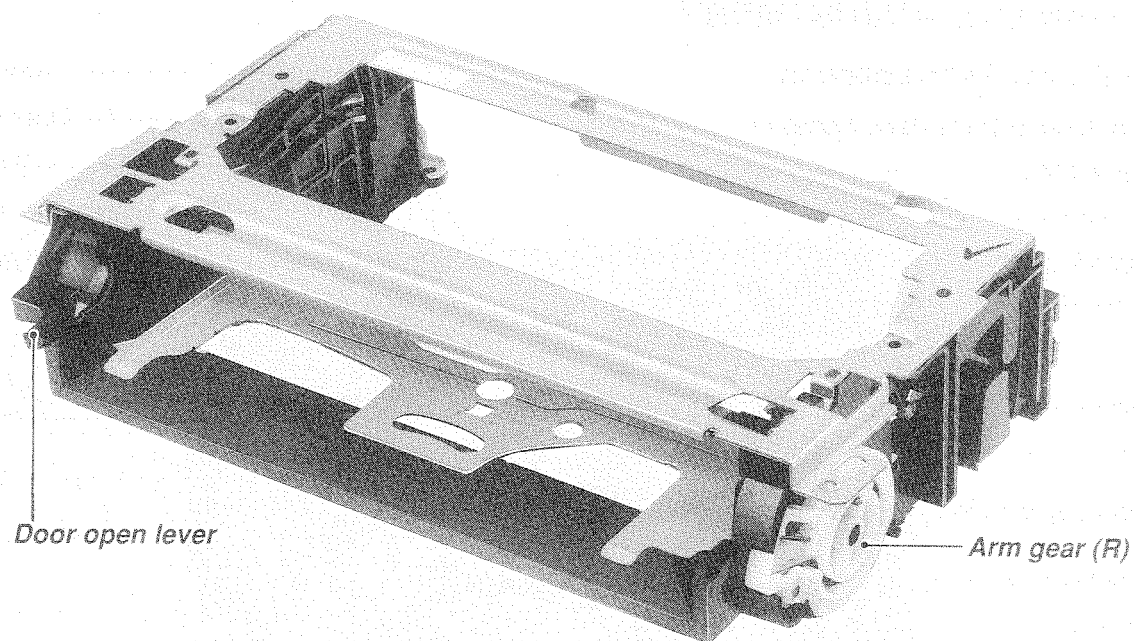


Top View

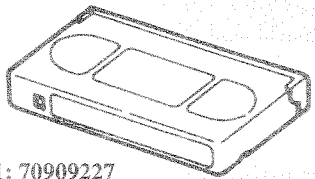
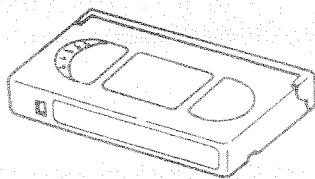
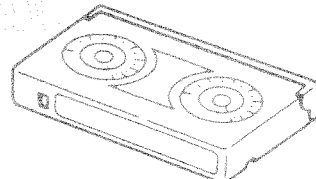
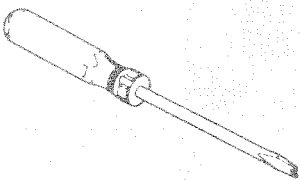
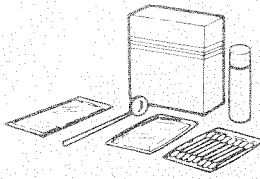
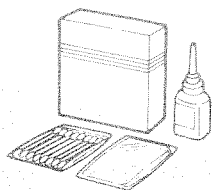



Bottom View

## 1-1-2. Front Loading Mechanism



## 1-2. Servicing Jig List

<p>Alignment tape</p>  <p>ST-C1: 70909227 ST-C3: 70909264</p>	<p>Back tension cassette gauge</p>  <p>70909103</p>	<p>Torque cassette gauge (KT-300NR)</p>  <p>70909199</p>
<p>Taper nut driver</p>  <p>70909228</p>	<p>VTR cleaning kit</p> 	<p>VTR oil kit</p> 
<p>Grease</p> 		

### 1-3. Main Parts Servicing Time

- Part replacement time differs from servicing life time of each part.
- Following table is prepared based on a standard condition (room temperature, room humidity). The replacement time will be varied depending upon operation environment, using methods, operation duty, etc.
- Particularly, life of the upper cylinder depends upon operation conditions.

	Part Name	Servicing Time (Operating Hours)										Note
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape Transport System	Tension pole											• When cleaning, use a swab or a piece of gauze soaked in alcohol.
	S/T-slant guide post											
	Impedance roller*											
	No. 8 guide post	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	• After cleaning, cleaned parts are dried completely, and then load a video cassette.
	Capstan											
	OSC guide post											
	No. 0 guide post											• When lubricating, always use the specified oil.
	No. 10 guide post											
	S/T-guide roller	Δ	Δ	Δ	○	○	○	○	○	○	○	
	Upper cylinder	Δ	○	○	○	○	○	○	○	○	○	• When lubricating, apply one or two drops of oil after the cleaning with alcohol.
	FE head	Δ	Δ	Δ	○	○	○	○	○	○	○	
	ACE head	Δ	○	○	○	○	○	○	○	○	○	
Tape Drive System	Pinch roller	Δ	○	○	○	○	○	○	○	○	○	• Check the back tension.
	Capstan motor	Δ	Δ	Δ	Δ	Δ	○	○	○	○	○	
	Reel clutch		○	○	○	○	○	○	○	○	○	
	Loading motor				○	○	○	○	○	○	○	
	Loading belt & Reel belt	Δ	○	○	○	○	○	○	○	○	○	
	Supply reel table				▲				▲		○	
	Take-up reel table				▲				▲		○	
	Idle gear assembly	Δ	○	○	○	○	○	○	○	○	○	
Others	Band brake assembly		○	○	○	○	○	○	○	○	○	

Δ : Cleaning    ▲ : Lubrication    ○ : Check and replace if necessary

\* There are two types. One type has an impedance roller and another type has no impedance roller.

## 1-4. Main Parts Replacement

### 1-4-1. Front Loading Assembly Replacement

#### (1) Front loading assembly replacement

1. Make sure that there is no cassette in the VTR.
2. Remove the top cover and the front panel.
3. Remove two screws (1).
4. Move the front loading assembly in the direction shown by the arrow (A) and remove it from the mechanism deck.
5. When remounting, use the above steps in reverse order.

#### Note:

- When removing the front loading assembly in the PLAY and/or REVIEW position(s) (the pinch roller is pressed to the capstan), push the tension pole to the cylinder direction and remove the front loading assembly.
- Before reinstalling the front loading assembly, check by pressing the worm gear in the direction of the arrow (B) that the worm gear does not engage the worm wheel (C).
- Before securing two screws, check that the F/L worm wheel engages without biting the tip of the worm gear.

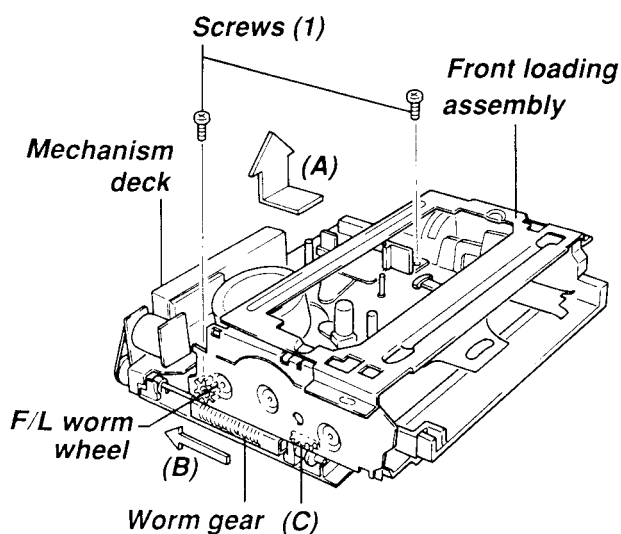


Fig. 4-1-1 Front loading assembly replacement

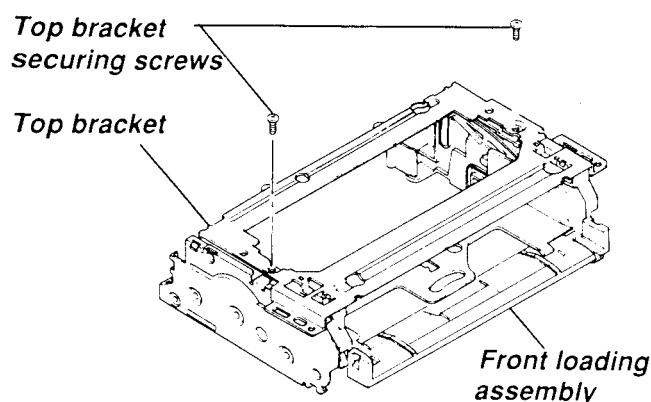


Fig. 4-1-2 Top bracket securing screw replacement

#### (2) Top bracket securing screw replacement

1. Remove the top bracket securing screw from the front loading assembly.
2. Remount a new top bracket securing screw on the front loading assembly.

#### (3) Arm gear R replacement

1. Move three claws (1) in the direction of the arrow and remove the arm gear R. (Refer to Fig. 4-1-4.)
2. Remove the spring R attaching to the arm gear R.
3. Replace the arm gear in the reverse order of removal. Take care not to mount the spring R on the opposite side.

#### Note:

- Align the cutout on the drive gear R and the ◀ mark on the arm gear R.
- Pay attention to positions of the boss (A) and the spring R. (Refer to Fig. 4-1-4.)
- When attaching the spring R, confirm that it is in a right position.
- Confirm that Boss (E) of the Fig 4-1-15 view (C) goes into groove (B).

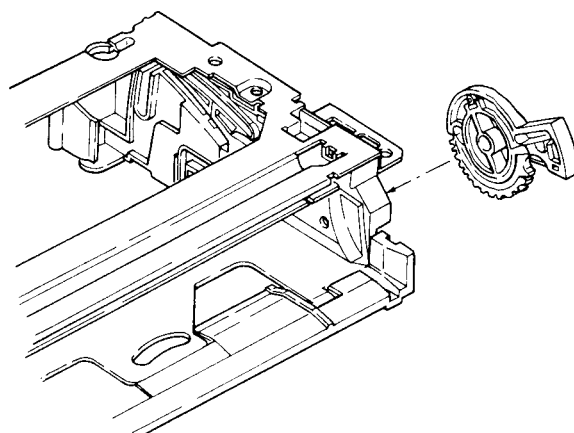


Fig. 4-1-3 Arm gear R replacement

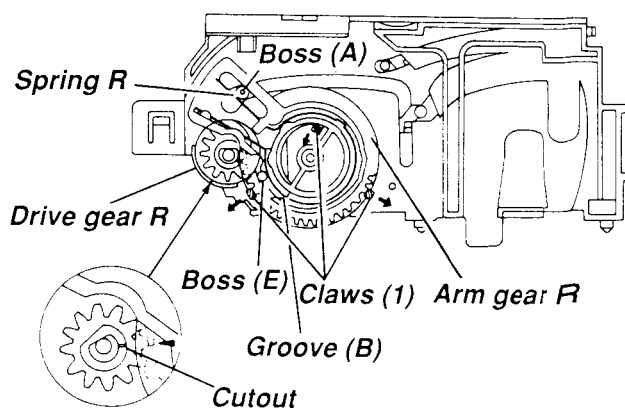


Fig. 4-1-4

#### (4) Door lever replacement

1. To remove the top bracket, remove the top bracket securing screws, push the claws (E) and (F), remove the top bracket upward and slide it in the direction of the arrow (H).
2. Push the claws of the side bracket L, (A), (B), (C) and (D), and remove (A)', (B)', (C)' and (D)' of the back-up plate side.
3. Replace the door lever according to the removing procedures in the reverse order.

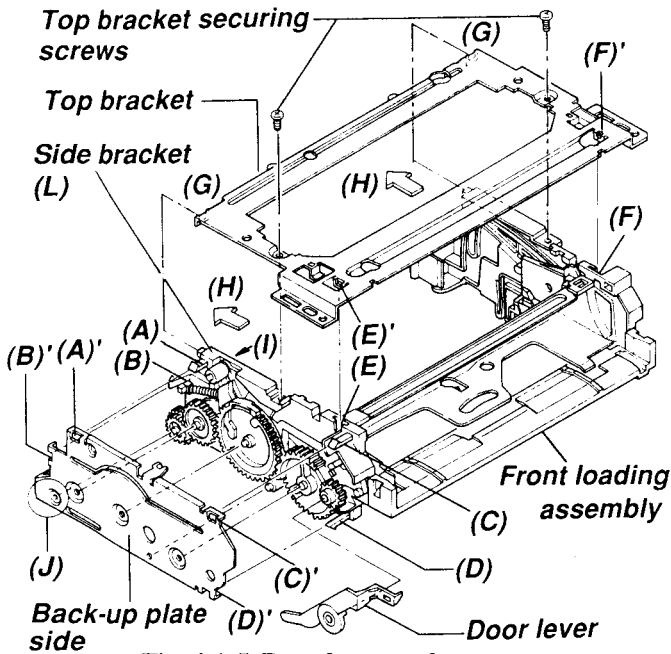


Fig. 4-1-5 Door lever replacement

#### Note:

- Take care that the end of the door lever (M) is put in the (P) between the walls, (L) and (K), of the arm gear L. (Refer to Fig. 4-1-6.)
- Take care that the end of the door lever (N) is positioned over the holder guide. (Refer to Fig. 4-1-6.)
- When mounting the back-up plate side, take care that its (J) section is positioned over the front loading assembly. (Refer to Fig. 4-1-6, Fig. 4-1-7.)

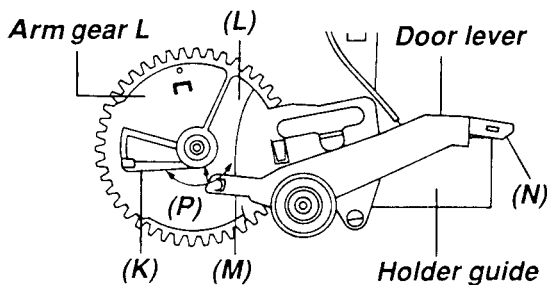


Fig. 4-1-6

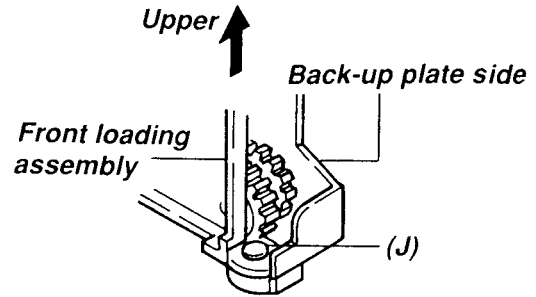


Fig. 4-1-7

#### (5) Arm gear L replacement

1. Remove the top bracket, back-up plate side and the door lever according to the door lever replacement procedure. (Refer to item "(4) Door lever replacement".)
2. Turn the arm gear L in the direction of the arrow (A) (to move the (D) section from the drive gear L) and remove it in the direction of the arrow (B).
3. Apply grease to the tip of the post (2) at the bracket side L (hatching portion).
4. Replace the arm gear L in the reverse order of removal.

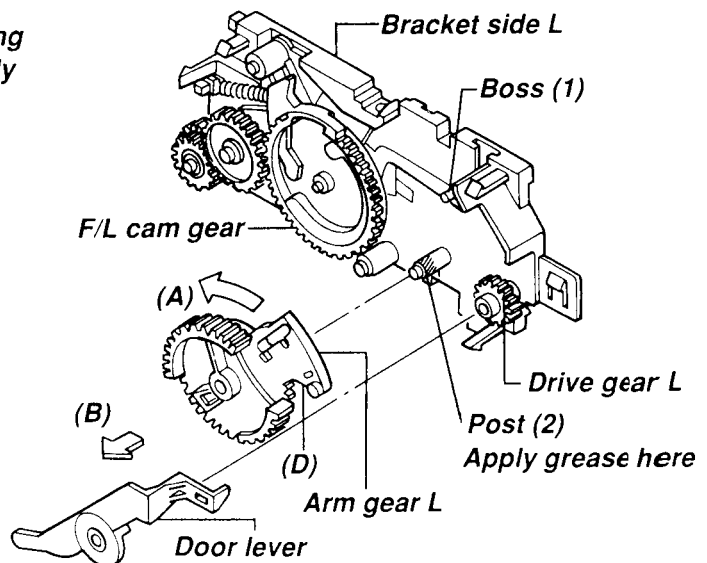


Fig. 4-1-8 Arm gear L replacement

#### Note:

- Align the (C) part of the drive gear L and the ▼ mark of the arm gear L shown by (C)'.
- Align the ▼ mark of the F/L cam gear and the tip of the upper gear of the arm gear L shown by (E).
- Make sure that the boss (1) and the spring are positioned as shown in Fig. 4-1-9.



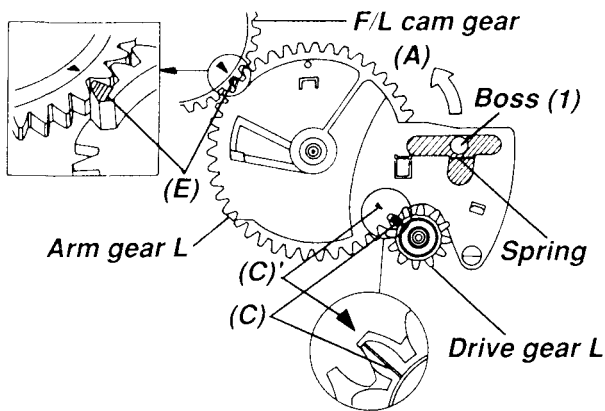


Fig. 4-1-9

#### (6) Relay gear replacement

1. Remove the top bracket and the back-up plate side. (Refer to item “(4)1., 2. Door lever replacement”.)
2. Remove the relay gear in the direction of the arrow and apply grease to the tip of the relay gear post.
3. Reinstall a new relay gear in the reverse order of removal.

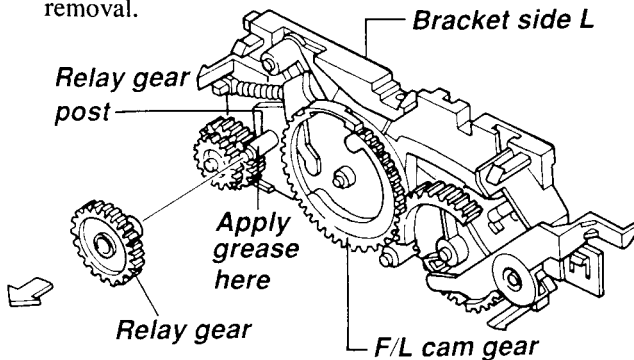


Fig. 4-1-10 Relay gear replacement

#### (7) F/L cam gear replacement

1. Remove the top bracket and the back-up plate side. (Refer to item “(4) 1., 2. Door lever replacement”.)
2. Remove the relay gear and then remove the F/L cam gear.
3. Apply grease to the relay gear post at the bracket side L and the tip of the F/L cam gear post.
4. Replace the F/L cam gear and apply grease to the outer surface of the gear of the F/L cam gear.
5. Reinstall the F/L cam gear by reversing above procedures.

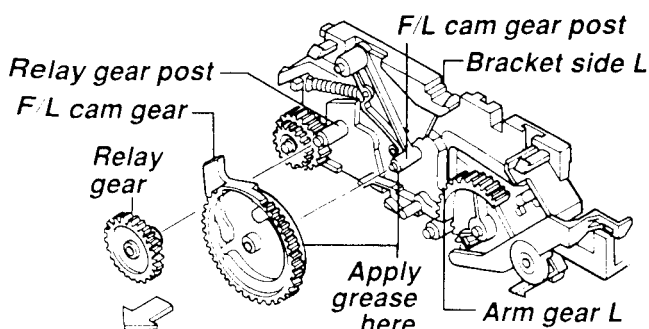


Fig. 4-1-11 F/L Cam gear replacement

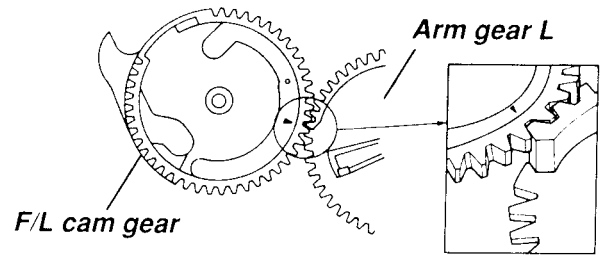


Fig. 4-1-12 Phase matching

#### Note:

- Align the ▼ mark on the F/L cam gear and the tip of the gear tooth (thicker) of the arm gear L. (Refer to Fig. 4-1-12.)

#### (8) F/L worm wheel replacement

1. Remove the top bracket and the back-up plate side. (Refer to item “(4)1., 2. Door lever replacement”.)
2. Remove the relay gear and then remove the F/L worm wheel.
3. Apply grease to the tip of the worm wheel post.
4. Reinstall a new F/L worm wheel using the previous steps in reverse order.

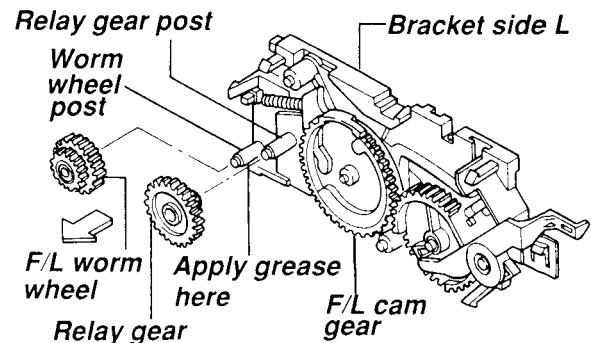
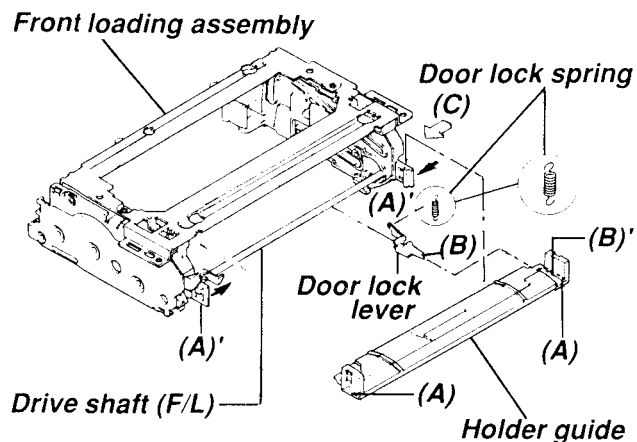


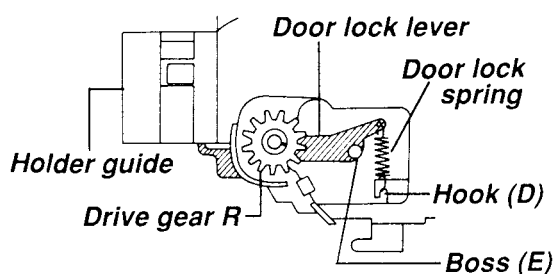
Fig. 4-1-13 F/L worm wheel replacement

#### (9) Door lock lever replacement

1. Make the cassette holder assembly slid to an about 30 mm inner side.
2. Push two claws (A)' of the front loading assembly in the direction of the arrow and remove the holder guide upward.
3. Remove the arm gear R. (Refer to item “(3) Arm gear R replacement”.)
4. Remove the door lock spring from the hook (D) of the front loading assembly. (Refer to Fig. 4-1-15.)
5. Remove the door lock lever from the drive shaft (F/L) and remove the door lock spring from the door lock lever.
6. Mount a new door lock lever in the reverse order of removal.



**Fig. 4-1-14 Door lock lever replacement**



**Fig. 4-1-15 View (C)**

**Note:**

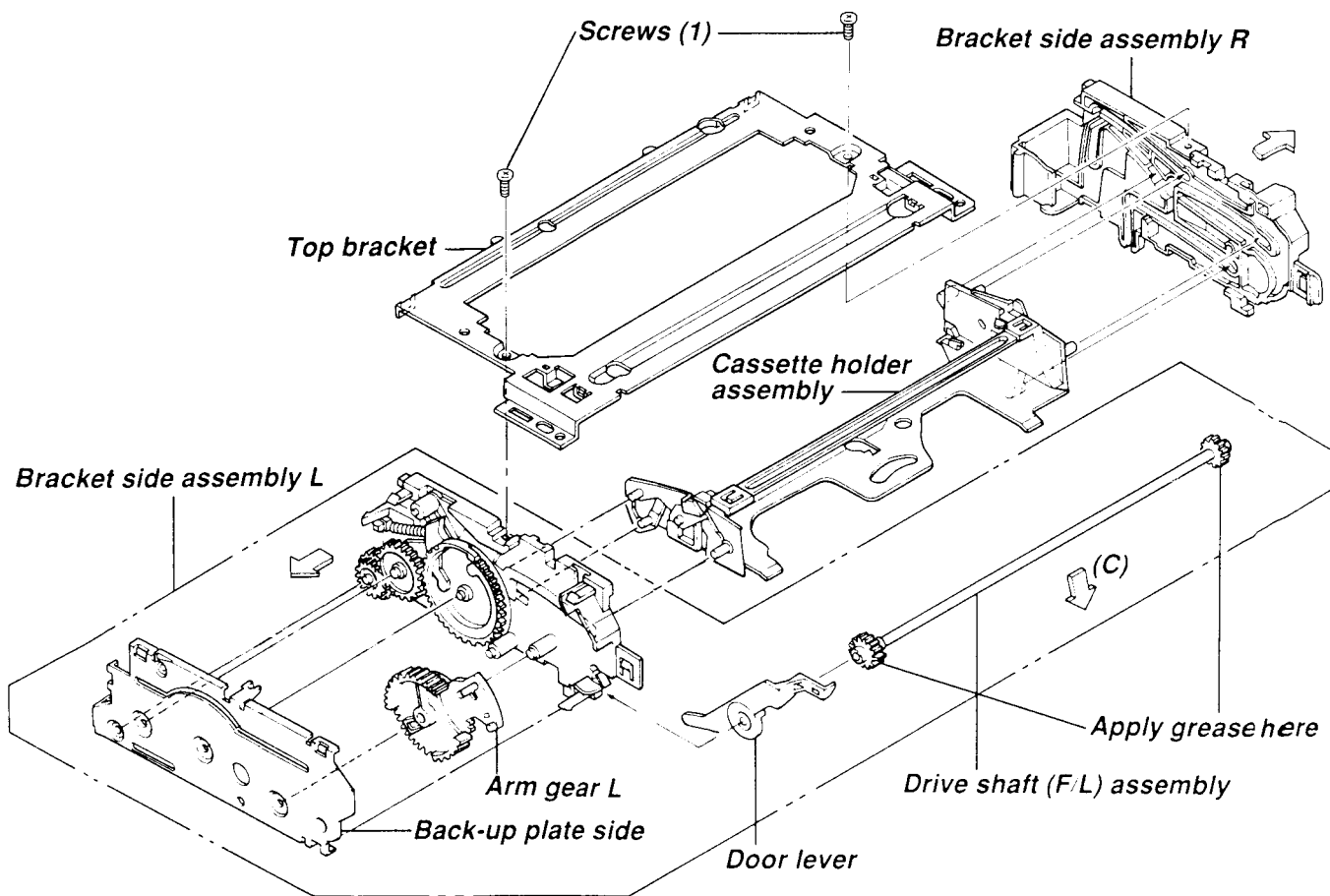
- Take care not to give permanent deformation to the door lock spring.
- In installing the holder guide, insert the tip of the door lock lever (B) into the hole (B)' on the holder guide.
- Confirm that boss (E) goes into groove (B) of Fig. 4-1-4.

**(10) Door lock spring replacement**

1. Remove the holder guide and the door lock lever. (Refer to item "(9) Door lock lever replacement").
2. Remove the door lock spring from the door lock lever.
3. Mount a new door lock spring in the reverse order of removal.

**(11) Drive shaft (F/L) assembly replacement**

1. Remove the arm gear R according to the replacement procedure for the arm gear R. (Refer to item "(3) Arm gear R replacement".)
2. Remove the holder guide and the door lock lever. (Refer to item "(9) Door Lock Lever Replacement".)
3. Remove the top bracket. (Refer to item "(4) Door lever replacement 1.").



**Fig. 4-1-16 Drive shaft (F/L) assembly replacement**

4. Remove the bracket side assembly R and the bracket side assembly L from the cassette holder assembly.
5. Remove the back-up plate side from the bracket side assembly L. (Refer to item "(4) Door lever replacement 2.").
6. Remove the door lever and then arm gear L from the bracket side assembly L. (Refer to item "(4) Door lever replacement" and "(5) Arm gear L replacement".)
7. Remove the drive shaft (F/L) assembly from the bracket side assembly L in the direction of the arrow (C). (This can be removed by bending the wall (D) in the direction (A).) (Refer to Fig. 4-1-17.)
8. After replacing the drive shaft (F/L) assembly, apply grease to the outer surface of the gear.

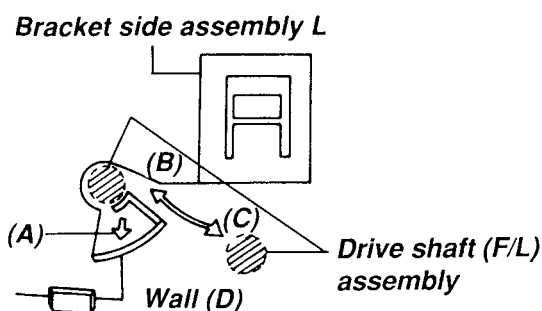


Fig. 4-1-17

9. Install the drive shaft (F/L) assembly according to the reverse procedure.
10. Make sure that it is operating normally.

**Note:**

- When mounting the bracket side assembly L on the cassette holder assembly, let bosses (E), (F) and (G) of the cassette holder through the grooves on the bracket side assembly L, (E)', (F)' and (G)' respectively. Also pass the boss (E) between the groove (E)" on the arm gear L and spring (2) (upper side). (Refer to Fig. 4-1-18.)
- When mounting the bracket side assembly R on the cassette holder assembly, pass bosses (H), (I), (J) and (K) through the grooves on the bracket side assembly R, (H)', (I)', (J)' and (K)' respectively. (Refer to Fig. 4-1-19.)

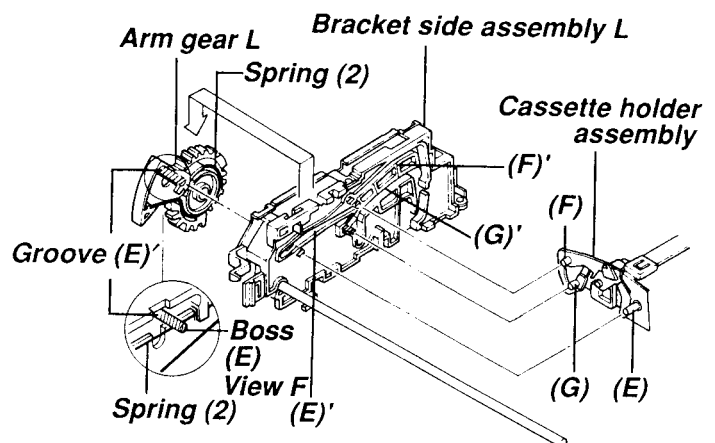


Fig. 4-1-18

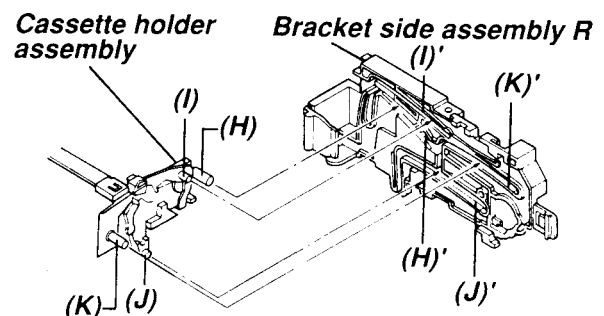


Fig. 4-1-19

## 1-4-2. Cylinder Replacement

### (1) Upper cylinder assembly

#### <Inspection>

1. Check if the video heads are damaged or worn out.
2. Check the video heads for clogging. (Replace the upper cylinder assembly if the clogging is not remedied after cleaning).

#### <Replacement>

1. Remove two screws (2) and remove the upper cylinder assembly.
2. Clean the new cylinder assembly (3) and the flange (5) mounting surface with a cleaning kit.
3. Align the head (A) (P.C. board's color : green) and the marker on the rotary transformer P.C. board (4) and then mount the upper cylinder assembly (Tightening torque: 3 – 4kg.cm).

**Note:**

Take care not to touch the connector assembly or not to give deformation to the spring.

4. Perform the tape transport adjustment.

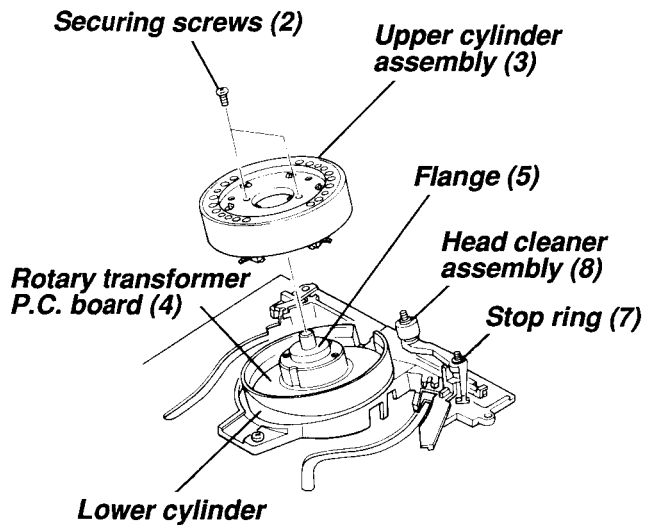


Fig. 4-2-1 Upper cylinder replacement

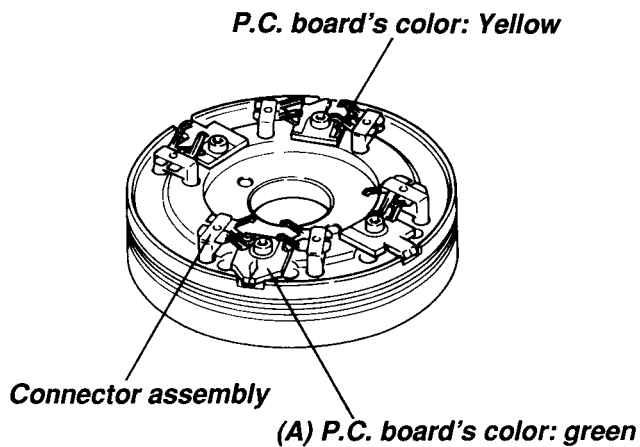


Fig. 4-2-2

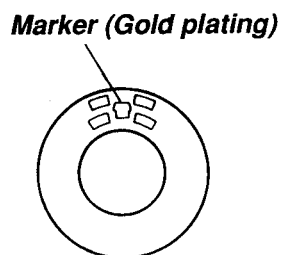


Fig. 4-2-3

## (2) Cylinder motor

### <Inspection>

1. Independently apply power to the cylinder motor.
2. If the motor does not turn, replace the rotor and the stator.

### <Rotor replacement>

1. Remove the mechanism P.C. board securing screw to remove the mechanism P.C. board.
2. Remove the ground brush securing screw to remove the ground brush.
3. Remove the ground cap.
4. Remove two rotor screws (1) and replace the rotor (3) (Tightening torque: 3 – 4 kg.cm).

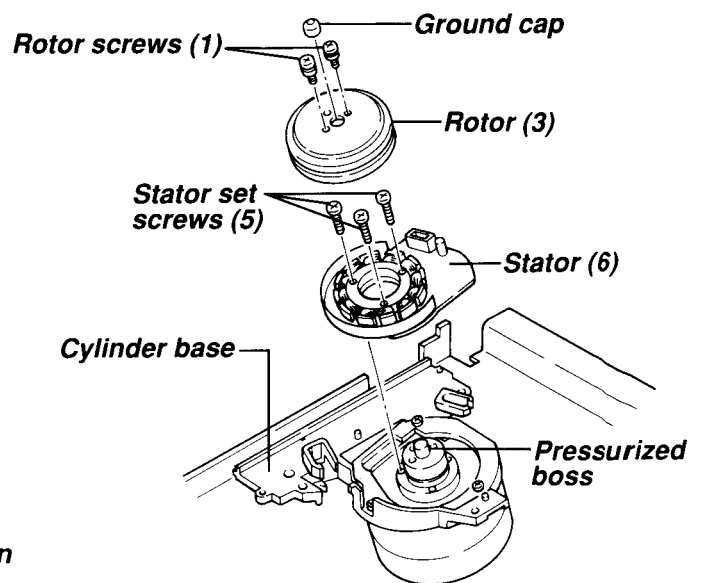


Fig. 4-2-4 Cylinder motor replacement

### Note:

When assembling a new rotor, align the two phase matching holes to fit the rotor and the pressurized boss (4) (Fig. 4-2-5).

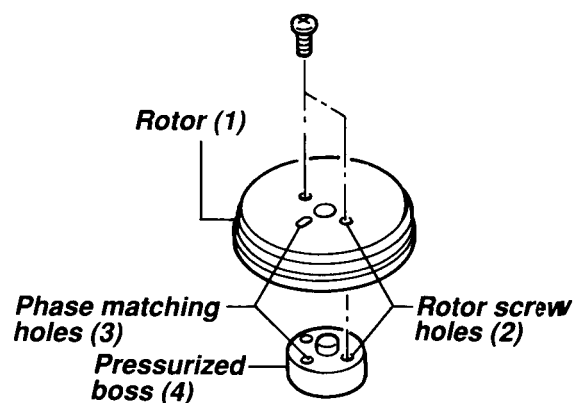


Fig. 4-2-5 Phase matching of rotor pressurized boss

#### <Stator replacement>

1. Remove the mechanism P.C. board securing screw to remove the mechanism P.C. board.
2. Remove the ground brush securing screw to remove the ground brush.
3. Remove the ground cap.
4. Remove two rotor securing screws (1) and remove the rotor (3). (Fig. 4-1-4.)
5. Remove the stator securing screws (5).
6. Replace the stator (6) by pulling it out (Tightening torque: 1.5 – 2.5kg.cm).
7. Reassemble the cylinder according to the reverse procedures.

#### (3) Cylinder assembly

##### <Inspection>

1. Check if rotating surface of the lower cylinder has no damages such as scratches, cracks, etc.
2. Check to see smooth rotation of the upper cylinder. If abnormality is found, replace the cylinder assembly.

##### <Replacement>

1. Remove the preamplifier (1) by removing two securing screws (8).
2. Disconnect the connector (2).
3. Remove three cylinder securing screws (4).
4. Remove the cylinder assembly (5).
5. Position the cylinder base (7) first. Mount a new cylinder assembly using the previous steps in reverse order, taking care not to touch the video heads directly and not to damage the cylinder surface.
6. Perform the tape transport adjustment.

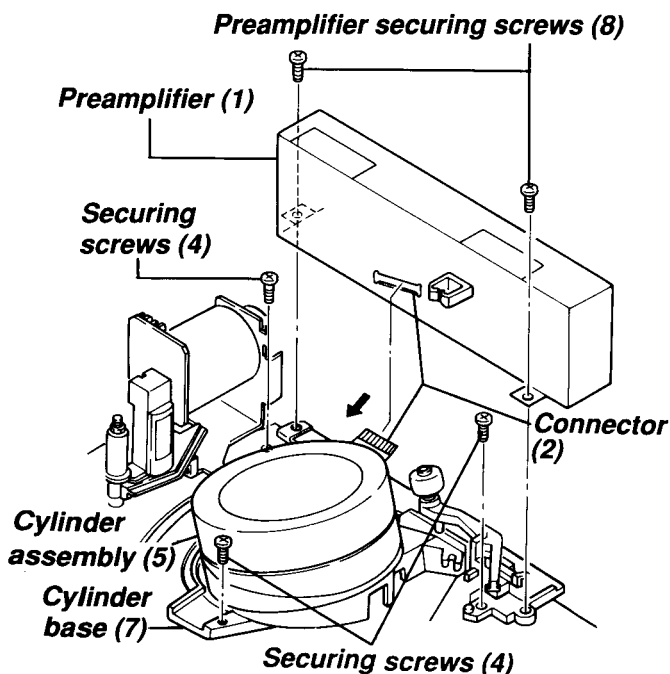


Fig. 4-2-6 Cylinder assembly replacement

#### (4) Lower cylinder assembly

##### <Inspection>

1. Check if rotating surface of the lower cylinder has no damages such as scratches, cracks, etc.
2. Check to see smooth rotation of the lower cylinder.
3. Check if the P.C. board is not damaged. If any abnormality is found, replace the cylinder assembly.

##### <Replacement>

1. Remove the cylinder assembly (Fig. 4-1-6).
2. Remove the ground cap (5).
3. Remove the rotor (11).
4. Remove the stator (13).
5. Remove the cylinder base securing screw (14) and then the cylinder base (15) can be removed.
6. Remove the upper cylinder assembly (17). (Refer to item "1-4-2".)
7. Replace the lower cylinder assembly (16).
8. Mount a new cylinder assembly using the previous steps in reverse order, taking care not to touch the video heads directly or not to damage the cylinder.
9. Perform the tape transport adjustment.

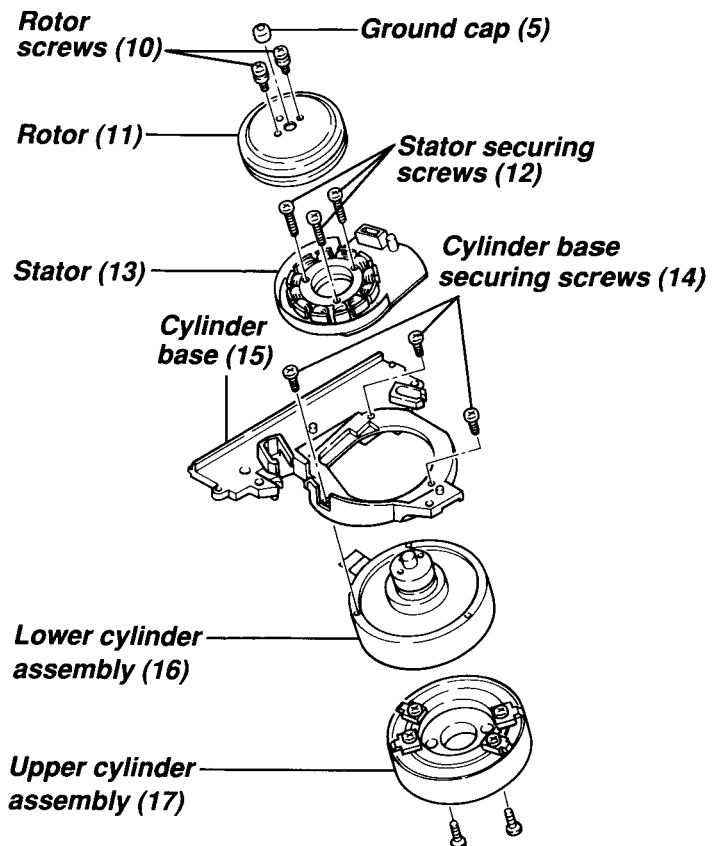


Fig. 4-2-7 Lower cylinder assembly replacement

#### (5) Head cleaner assembly replacement

1. Remove the spring (1) from the hook at the ACE base (A).
2. Remove the stop ring (2) and remove the head cleaner assembly (3).
3. Replace the head cleaner assembly in the reverse order of removal.

#### Note:

- Take care that the head cleaner roller (B) is not contaminated by grease, oil, dust, etc.
- After remounting, check to see the head cleaner assembly is smoothly rotating and the stopper (C) is attached to the cylinder base (D).

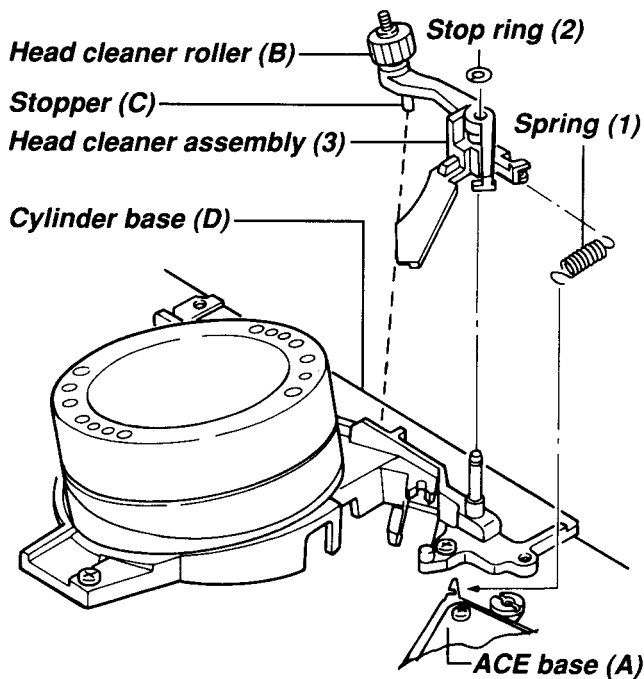


Fig. 4-2-8 Head cleaner assembly replacement

#### 1-4-3. Transport System Parts Replacement

##### (1) ACE head assembly replacement

1. Disconnect the FPC (8) from the connector.
2. Remove the head cleaner spring (13) from ACE main base (1).
3. Remove the taper nut (3).
4. Turn the ACE height adjusting nut (7) counterclockwise and remove it upward in order to remove the ACE base assembly (5).

#### Note:

Note positions of ACE main base (1) and the upper surface of taper nut (3).

5. Remove the E-ring (9) and the azimuth adjusting screw (2) in order to remove the ACE head assembly (11).
6. Replace the ACE head assembly (11), according to the reverse procedures.
7. Mount the taper nut (3) and the spring (13) in the reverse order of removal and insert the FPC (8) into the connector.

#### Note:

- When mounting ACE torsion spring (4), first insert the tip of the spring into the hole on the main base and then hook the opposite tip of the spring to ACE main base (1) which has been inserted into ACE post (12). Mount the taper nut (3) while moving the base (1) counterclockwise with your hand.

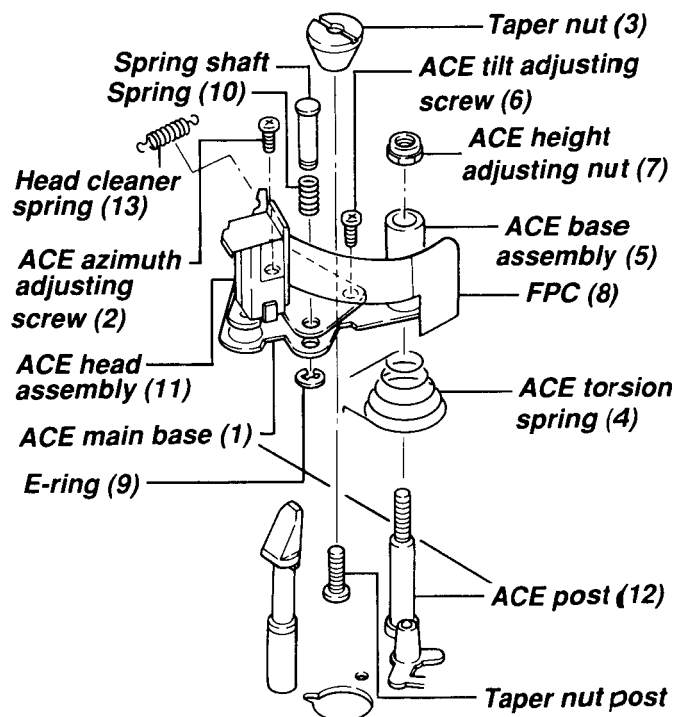


Fig. 4-3-1

### (2) No. 8 guide sleeve replacement

1. Remove No. 8 cap (1) and No. 8 guide sleeve (2) in this sequence as shown in Fig. 4-3-2. When reassembling, perform the previous steps in reverse order.
2. To mount No. 8 guide sleeve (2), insert No. 8 cap (1) onto No. 8 post (3) and push the cap downward while turning it left and right.

#### Note:

- No. 8 guide sleeve functions as reference for tape transport, so the replacement should be made carefully not to damage the main base flatness.
- When mounting the No. 8 cap, mount the cap with its slant surface facing to cassette side.
- The guide sleeve has a directional characteristic, so take care when inserting it. Do not insert it upside down. The lower flange thickness is higher than the upper thickness by about 1.6mm.

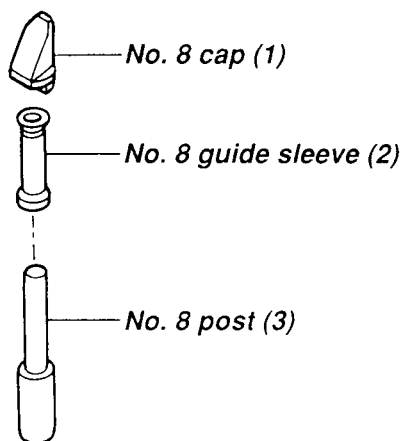


Fig. 4-3-2

### (3) FE head replacement

1. Disconnect the 2P connector of the FE head.
2. Remove the FE head mounting screw (5) shown in Fig. 4-3-3 and the FE head (6) can be removed.
3. Remount a new FE head and tighten the FE head mounting screw (5).
4. Connect the 2P connector.
5. Perform the transport adjustments, starting check from the linearity adjustment.

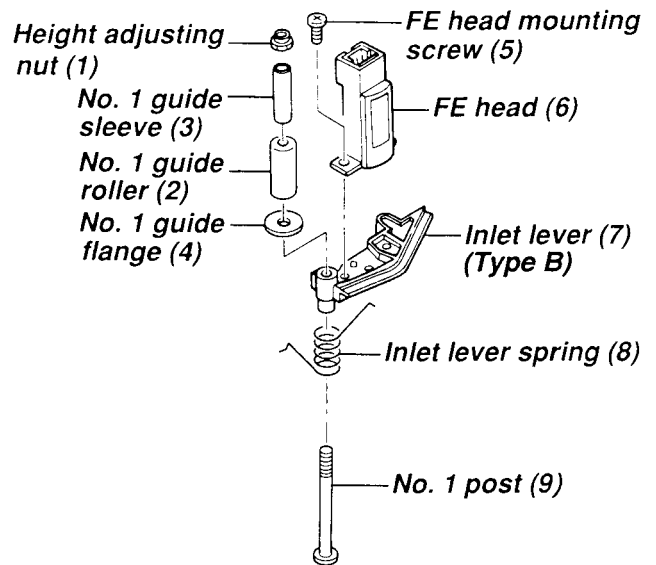


Fig. 4-3-3

### (4) No. 1 guide roller replacement

1. Remove the nut (1) shown in Fig. 4-3-3 and then remove the No. 1 guide roller (2).  
When removing the nut (1), note that inlet lever (7) detaches from stopper and the lever does not hit cylinder.  
(Before removing, note the number of threads exceeding the surface of the nut of the inlet lever. Take care that the lever does not hit the cylinder by removing the lever from the stopper when the nut is removed.)
2. Mount the No. 1 guide roller according to the reverse procedures. (Tighten the nut until the same thread number appears so that the roller will be of the same height as before.)
3. After replacing the No. 1 guide roller, perform the tape transport adjustment, starting from the linearity adjustment.

#### Note:

- Confirm that inlet lever is in the position which is shown in Fig. 4-4-2.

### (5) Impedance roller replacement

(Depending on the model, the impedance roller is included.)

1. Remove the impedance roller cap (10), shown in Fig. 4-3-4.
2. Remove the stop ring (11).
3. Mount a new impedance roller assembly in the reverse order of removal.
4. After replacement of the impedance roller, perform the tape transport adjustment from the linearity adjustment.

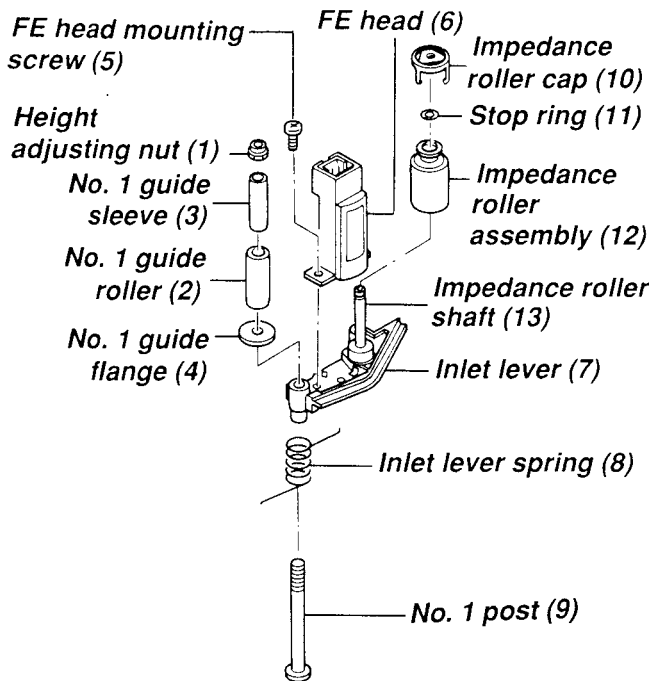


Fig. 4-3-4

### (6) S, T-guide rollers replacement

The same replacement procedures will be applied for both S and T-guide rollers.

1. Loosen the set screw (2), shown in the Fig. 4-3-5.
2. Turn the guide roller (1) counterclockwise and remove it.
3. Replace the guide roller by reversing the procedures.
4. After replacing the guide roller, perform the tape transport adjustment from the linearity adjustment.

#### Note:

- Take care since this guide roller has no O-ring.
- Tighten the set screw (2) with light pressure to allow the guide roller height to be adjusted.
- The T-guide roller has a mark on the upper flange, while the S-guide roller has no mark. Do not exchange them when remounting.

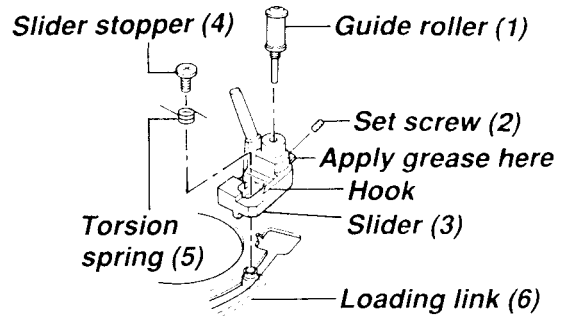


Fig. 4-3-5

### (7) S, T-sliders replacement

1. Remove the cylinder assembly.
2. Move the slider up manually to the loading position.
3. Remove the slider stopper (4) and the torsion spring (5), shown in Fig. 4-3-5.
4. Remove the guide roller and reinstall it in a new slider according to the procedures for replacement of S, T-guide rollers.
5. Replacement is made by reversing above procedures. When mounting the torsion spring and the slider stopper, hold the rear side of the loading link (6), shown in Fig. 4-3-5 from the cylinder mounting hole.
6. After completion of the replacement, perform the rough adjustment in the tape transport adjustment.

#### Note:

- Place the torsion spring in such a way that the shorter arm will come at the bottom. When mounting the slider stopper, confirm the torsion spring is not positioned over the hook at the slider.
- When the slider is replaced, always apply grease to the slider receptacle as shown in Fig. 4-3-5.

### (8) S, T-loading torsion springs replacement

The same replacement procedures will be applied for both S and T-loading torsion springs.

1. Remove the front loading assembly.
2. Place the deck vertically and remove the bottom plate and the mechanism P.C. board.
3. Remove the slider stopper (4) and the S, T-loading torsion springs (5) shown in Fig. 4-3-5. with the slider set to the unloading state.
4. When replacing, use above steps in reverse order. Remount the S, T-loading torsion springs while holding the rear side of the loading link (6), shown in Fig. 4-3-5.
5. After completion of the replacement, perform the transport adjustment from the linearity adjustment.

#### Note:

- The form of the torsion spring differs according to the slider type, S or T. Confirm that you take the right one in mounting.
- The torsion spring is placed in such a way that the shorter arm will come at the bottom. When mounting the slider stopper, check to see that the torsion spring is not positioned over the hook at the slider.



### (9) OSC guide lever assembly replacement

1. Remove the front loading assembly.
2. Remove the OSC guide nut (1) by turning it counterclockwise and remove the OSC guide lever assembly (2) together with the spring (3) upward by turning them counterclockwise.

#### Note:

- Note the number of threads exceeding the surface of the nut.
3. Replace the OSC guide lever assembly (2) with a new one.

#### Note:

- After completion of the replacement, place the hook at the upper end of spring (3) on the lever (2) to keep the OSC guide lever assembly with the hook attached.
4. Assemble by reversing above procedures. At that time, tighten the nut (1) so that the position of it is the same as before.

#### Note:

- Make sure that the OSC drive lever (4) matches the gear of the OSC guide lever assembly (2). (Align each protruded part.)
- Apply grease to the contacting surface between the OSC guide lever assembly (2) and the nut (1) and around the base of post (5).
- Note that the upper and lower sides of the nut are not mistaken.
- When mounting the OSC guide lever in the main base, note that it does not bend by touching cassette datum post.

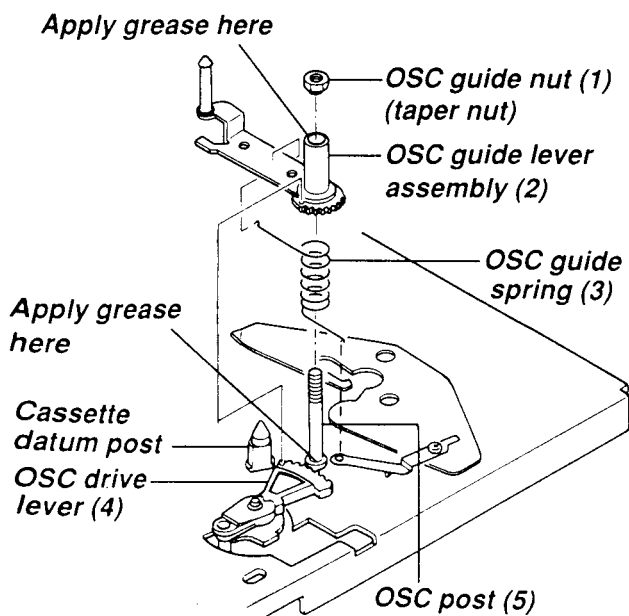
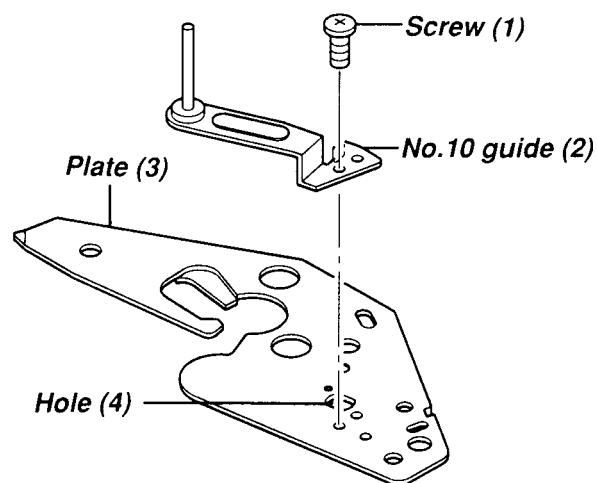


Fig. 4-3-6

5. After completion of the replacement, perform the adjustment according to item "2-5-4. (3) 5 OSC guide lever adjustment".

### (10) No. 10 guide replacement

1. Remove the front loading assembly.
2. Remove the screw (1) and remove No. 10 guide (2).
3. Assemble by reversing above procedures.
4. After completion of the replacement, perform the tape transport adjustment from the OSC guide lever adjustment.



**Put the stopper portion of No.10 guide into the hole (4), and tighten the screw (1)**

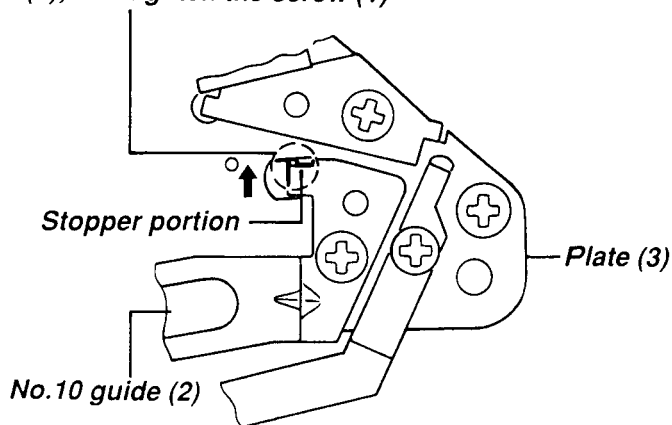


Fig 4-3-7

#### 1-4-4. Loading Motor Assembly Replacement

1. Remove the loading belt.
2. Remove the screw (1) and remove the loading motor assembly from the main base.  
Note that the lever of FE head assembly does not hit the cylinder.
3. Replace the loading motor assembly in the reverse order of removal. When remounting, turn the FE head assembly in the direction shown by the arrow.

##### Note:

- Take care that the loading belt is not twisted.
- Make sure that the protruded part (D) of the FE head assembly is positioned at the left of the wall (C) of the loading motor assembly.

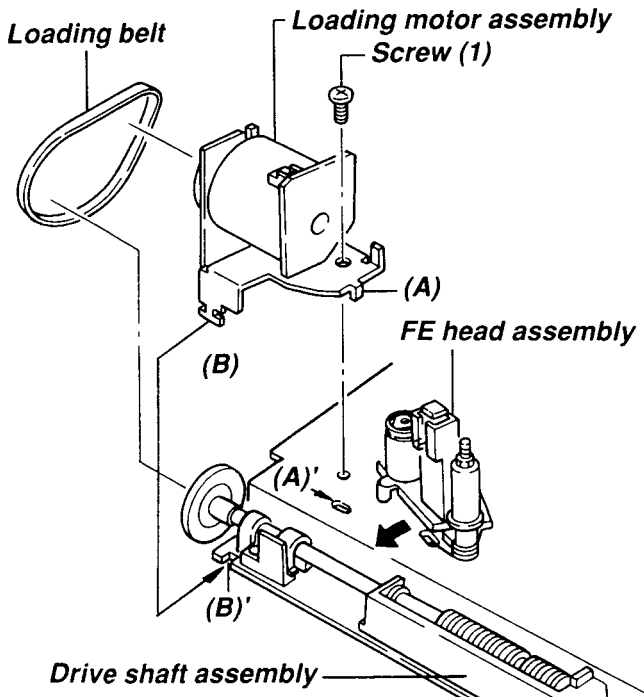


Fig. 4-4-1 Loading motor assembly replacement

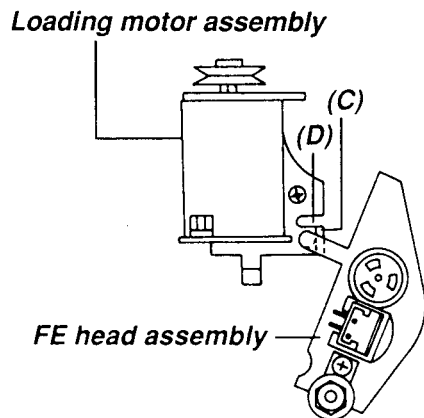


Fig. 4-4-2

#### 1-4-5. Stopper Plate Replacement

1. Remove the stopper plate from the main base by removing the screw (1).
2. Mount the stopper plate on the the main base with the screw (1) in such a way that the boss (A) will match the hole (A)'.

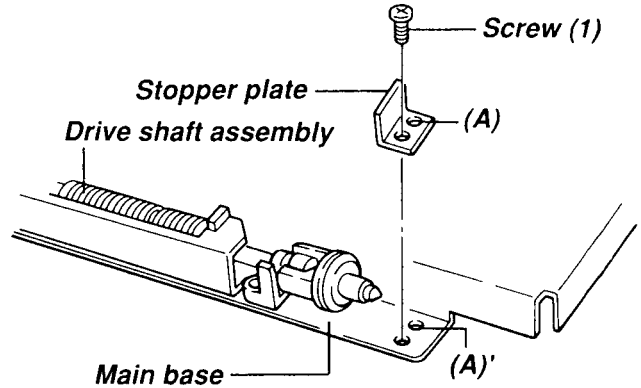


Fig. 4-5-1 Stopper plate replacement

### 1-4-6. Drive Shaft Assembly Replacement

1. Remove the main brake charge lever according to the main brake charge lever mounting procedure. (Refer to item "1-4-7 (2)".)
2. Remove the loading belt and loading motor assembly according to the loading motor assembly replacement procedures. (Refer to item "1-4-4. Loading Motor Assembly Replacement".)
3. Remove two screws (2) and remove the drive shaft assembly.
4. Remount the drive shaft by reversing above procedures.

#### Note:

- Insert the projection (G) of the drive shaft assembly into the hole (G') on the main base and energize the worm section in the direction of the arrow (F). (The worm section should not engage the gear (H).)
- As shown in Fig. 4-6-2, place the pot MB clutch with its projection (E) facing to the inside of the main base and the groove section facing upward. (At this time, the spring can be watched from the upper side).
- The worm part of the drive shaft assembly should be applied grease.

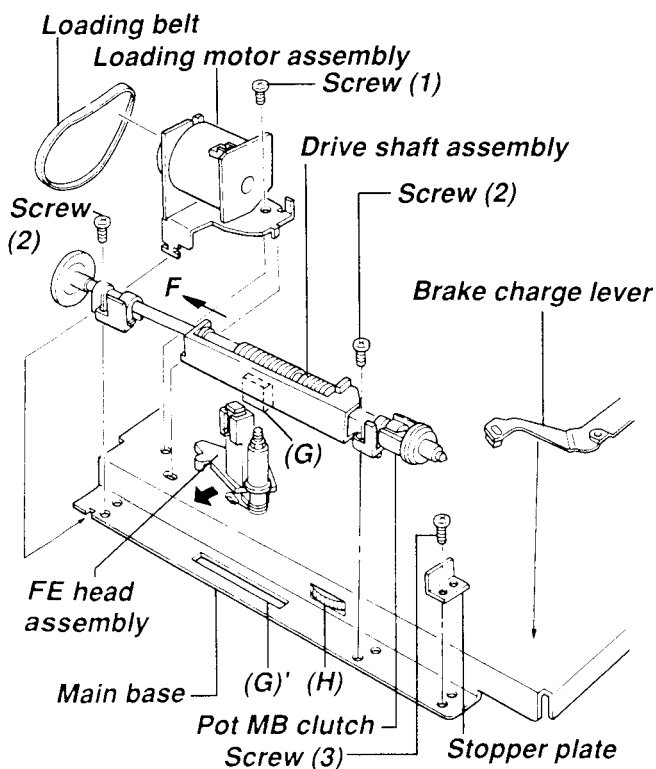


Fig. 4-6-1 Drive shaft assembly replacement

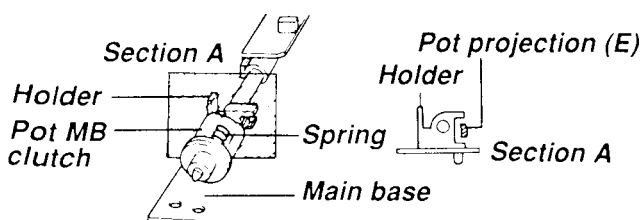


Fig. 4-6-2 Position of pot MB clutch

### 1-4-7. Main Brake System Parts Replacement

#### (1) Main brake lever assembly replacement

1. Remove the front loading assembly.
2. Remove the springs from the hooks (1) and (2) of the main base.
3. Remove the main brake lever assembly upward by sliding it in the direction of the arrows (B) and (D) while pushing the chassis in the direction of the arrows (A) and (C).
4. Mount a new main brake lever assembly in the reverse order of removal.

#### Note:

- When replacing the main brake lever, take care not to touch the pad surface of the brake.

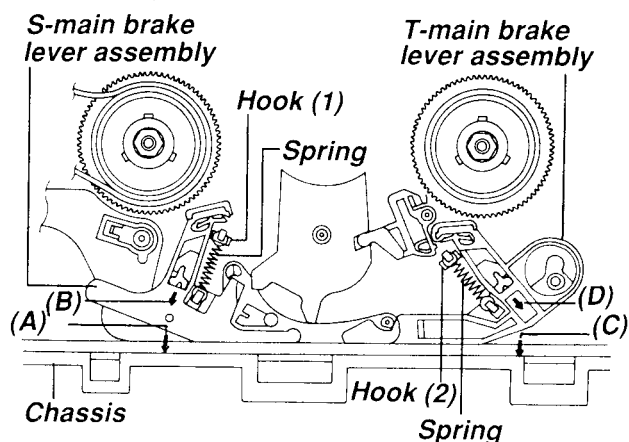


Fig. 4-7-1

#### (2) Main brake charge lever replacement

1. Remove the front loading assembly.
2. Remove the S, T-main brake lever assemblies. (Refer to item (1) )
3. Remove the spring from the hook (1) of the main base.
4. When removing the main brake charge lever, turn the idle arm assembly in the direction of the arrow (A) and push the hooks (2) and (3) in the direction of the arrows (C) and (D) while lifting the (B) section slightly.
5. Mount new main brake charge levers in the reverse order of removal.

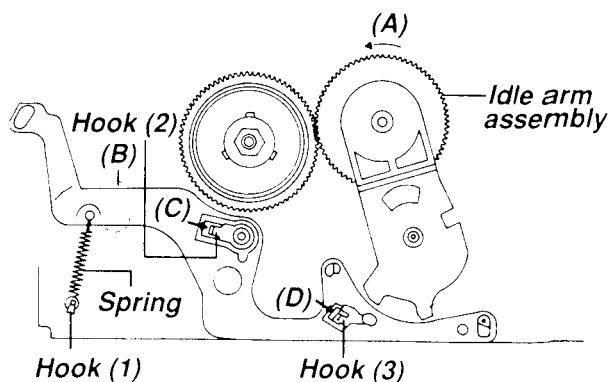


Fig. 4-7-2

#### 1-4-8. Idle Arm Kick Lever Replacement

1. Remove the front loading assembly, or move the cassette holder down to the loading position by turning the loading motor without inserting the cassette.
2. Pull the idle arm assembly up by turning it in the direction of the arrow (A) and pushing its claw (1) with tweezers, etc. in the direction of the arrow (B).
3. Install a new idle arm kick lever by reversing above procedures.

##### Note:

- Install the idle arm kick lever so that the (C) section may properly engage the (D) section of the idle arm assembly.

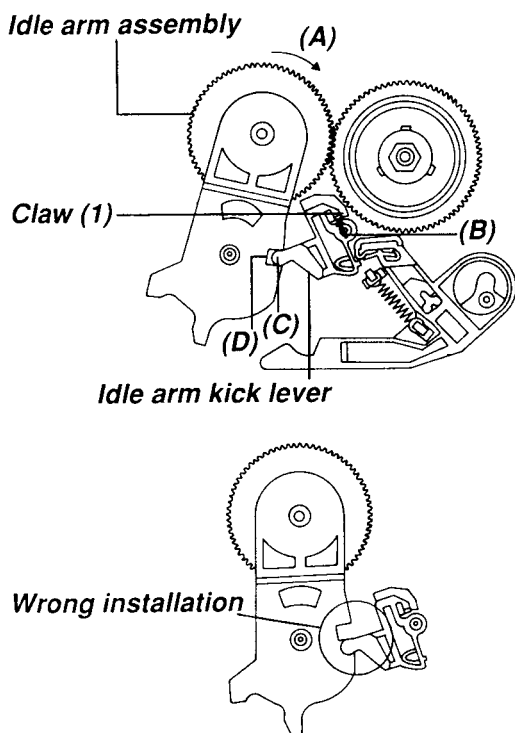


Fig. 4-8-1

#### 1-4-9. S-soft Brake Replacement

1. Remove the S-soft brake spring from the hook (3) of the S-slider lock lever and the hook (2) of the S-soft brake.
2. To remove, move the claw (1) of the S-soft brake with tweezers, etc. in the direction shown by the arrow (C), pull the S-soft brake up and turn it in the direction of the arrow (B).
3. Mount a new S-soft brake by reversing the above procedures.

##### Note:

- When installing the S-soft brake, insert the boss (A)' of the S-soft brake into the cam groove (A) of the cam gear.
- Before the S-soft brake lever is attached, the S-slider lock lever should be turned in the direction of the arrow (D).
- Take care not to stretch the hook of the S-soft brake spring.

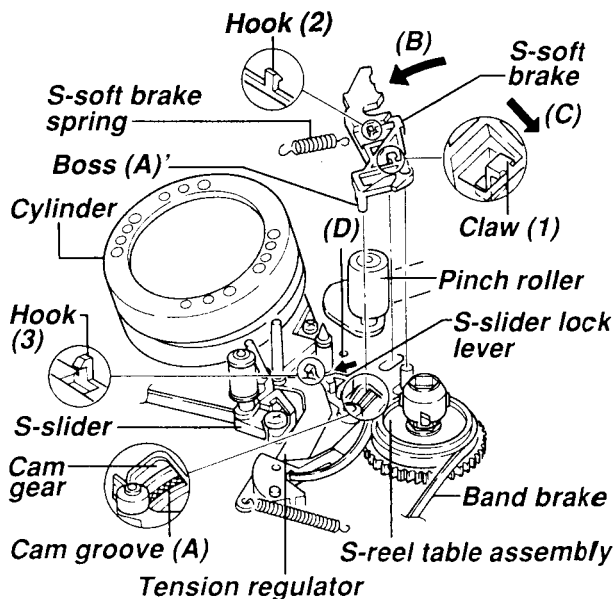


Fig. 4-9-1 S-soft brake replacement

#### 1-4-10. S-slider Lock Replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-soft Brake Replacement").
2. Remove the tension regulator assembly. (Refer to item "1-4-26. (1) Tension Regulator Assembly Replacement").
3. Turn the drive shaft pulley in the direction of the arrow(A) and move the S-slider from the S-slider lock in the direction of the arrow (B) (Refer to Fig. 4-10-2 A and B.)
4. Remove the S-slider lock by turning it in the direction of the arrow (C) and moving the claw (1) in the direction of the arrow (D).
5. Mount a new S-slider lock in the reverse order of removal.

#### Note:

- After completion of the replacement, put the S-slider back in its place where it was.

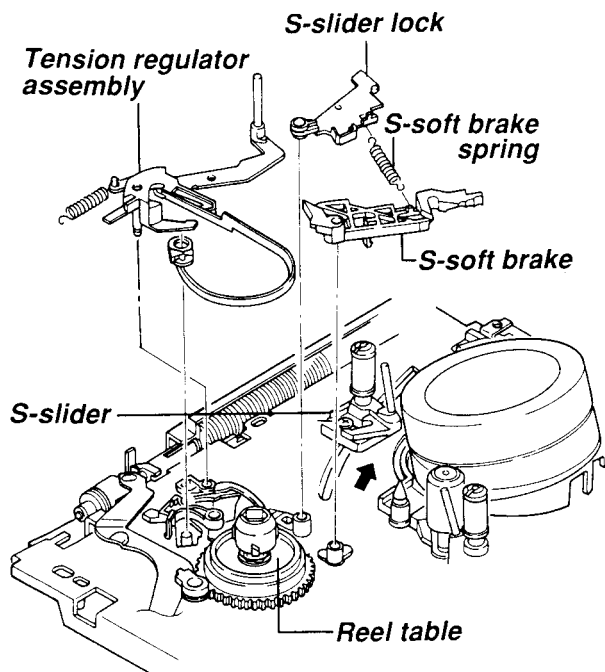


Fig. 4-10-1

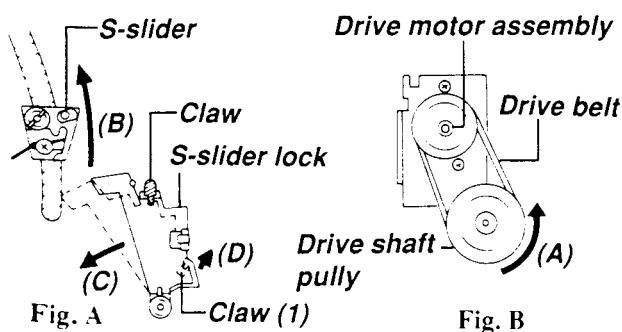


Fig. 4-10-2

#### 1-4-11. T-soft Brake Replacement

1. Remove the T-soft brake spring from the hook (2) of the main base.
2. Move the claw (3) of the T-soft brake in the direction of the arrow and remove the T-soft brake upward.
3. Remove the T-soft brake spring from the T-soft brake.
4. Mount a new T-soft brake by reversing above procedures.

#### Note:

- When mounting the T-soft brake spring on the T-soft brake, attach the opening side (1)' of the hook to hole (1) so that the opening will face upward.
- Take care in replacement not to touch the brake pad surface.

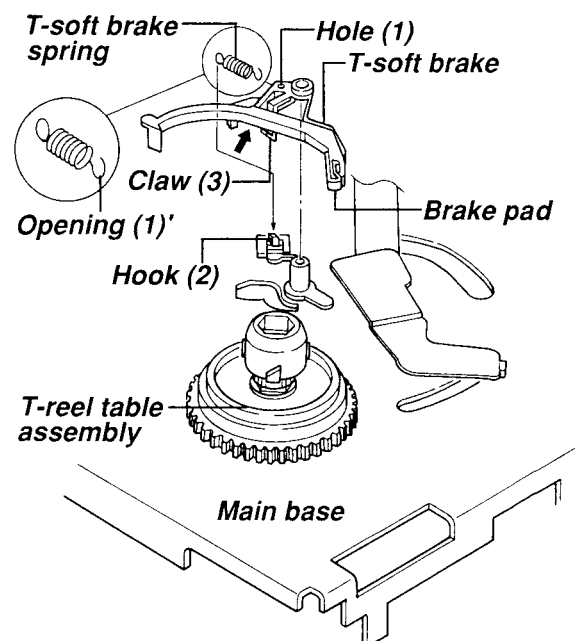


Fig. 4-11-1 T-soft brake replacement

#### 1-4-12. Idle Arm Assembly Replacement

1. Pull up the cap (1) and remove the idle arm assembly upward.
2. Remount a new idle arm assembly so that the protruded part (A) of the idle arm kick lever may fit into the concave part (A) on the idle arm assembly.
3. Mount the cap (1).

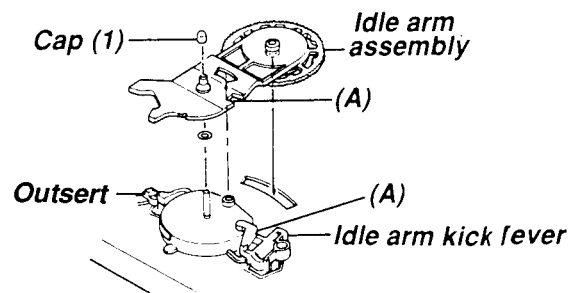


Fig. 4-12-1 Idle arm assembly replacement

### 1-4-13. S, T-reel Table Replacement

#### (1) S (Supply) reel table assembly replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-soft Brake Assembly Replacement".)
2. Remove the tension regulator assembly. (Refer to item "1-4-26. (1) Tension regulator assembly replacement".)
3. Remove the stop ring (1) and remove the S-reel table assembly upward.
4. After cleaning the reel shaft with a cleaning kit, lubricate it with one or two drops of oil using lubrication oil kit.
5. Replace the S-reel table assembly in the reverse order of removal.

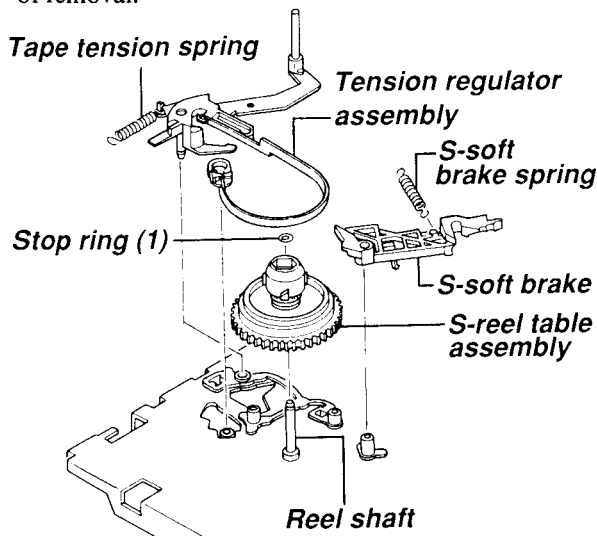


Fig. 4-13-1 Supply reel table assembly replacement

#### (2) T (Take-up) reel table assembly replacement

1. Remove the T-soft brake. (Refer to item "1-4-11. T-soft Brake Replacement".)
2. Remove the stop ring (1) and remove the T-reel table assembly upward.
3. After cleaning the T-reel shaft with a cleaning kit, apply it with one or two drops of lubrication oil kit. Apply oil also to the base (A) of the T-reel shaft.
4. Replace the T-reel table assembly in the reverse order of removal.

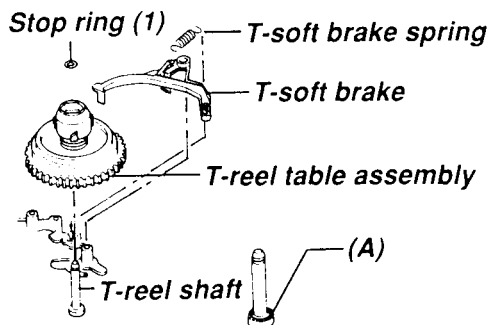


Fig. 4-13-2 Take-up reel table assembly replacement

### 1-4-14. Clutch System Parts Replacement

#### (1) Clutch assembly replacement

1. Turn the deck upside down and remove the reel belt.
2. Remove two screws (1) and remove the clutch holder.
3. Remove the clutch assembly upward.
4. Clean the clutch post using the cleaning kit, and then apply one or two drops of lubrication oil kit after confirming that the washer (2) is inserted into the clutch post.
5. When remounting, use the reverse procedures.
6. Check the reel torque, using the torque cassette. (Refer item "1-5-3. Reel Torque Check".)

#### Note:

- When remounting the clutch assembly on the deck, each protruded part of the clutch assembly, (A) and (B), should match each hole on the main base according to size.
- When remounting, take care the belt is not twisted.
- Do not deform the clutch holder. And, the hole (3) makes to be hooked by the clutch post groove.
- Be sure to insert the washer (2).

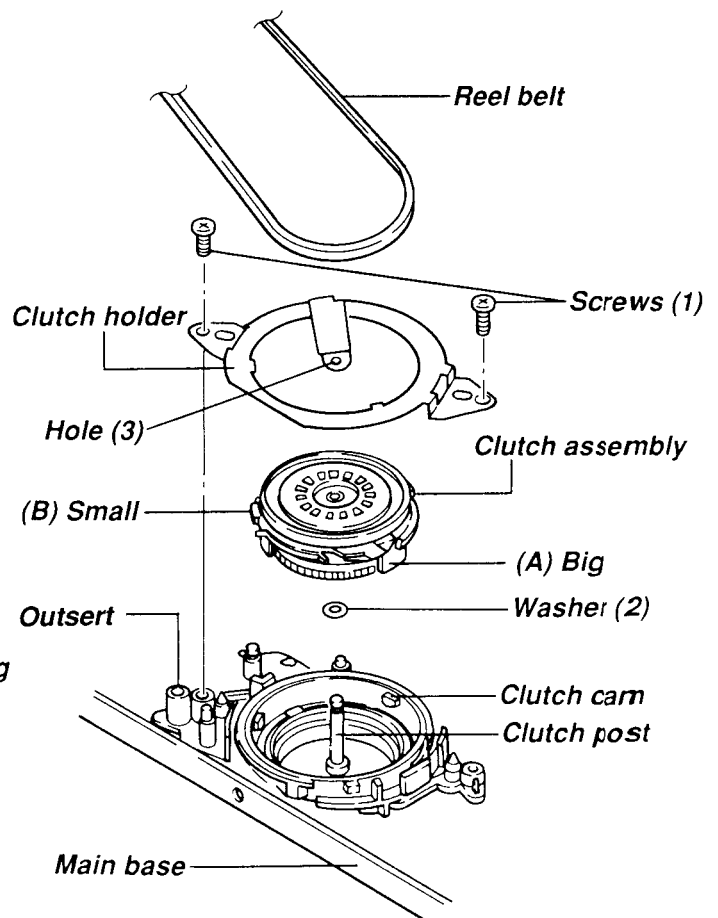


Fig. 4-14-1 Clutch assembly replacement

## (2) Clutch cam replacement

1. Turn the deck upside down and remove the reel belt.
2. Remove the clutch assembly according to the replacing procedures. (Refer to item "1-4-14. (1) Clutch assembly replacement".)
3. Remove the clutch cam.
4. Remount a new clutch cam by reversing the removal procedures.
5. When replacing, apply grease to the whole outer surface of three protruded portions (4) of the clutch cam.

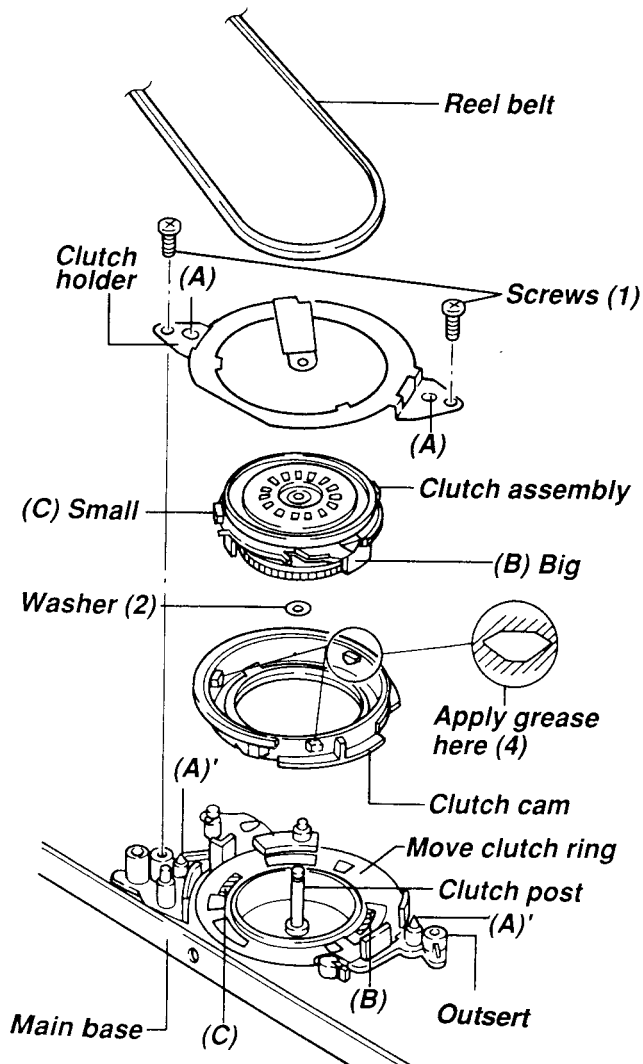


Fig. 4-14-2 Clutch cam replacement

## <Clutch cam installation>

(Refer to Fig. 4-14-3.)

### Note:

- Check that the move clutch ring has not floated from main base before attaching the clutch cam.
- Move the boss (3) in the direction of the arrow.
- Align the O mark on the gear of the clutch cam and the Δ mark on the cam gear.
- Insert the end of the rec-inhibiting lever between the outset wall and the clutch cam wall.

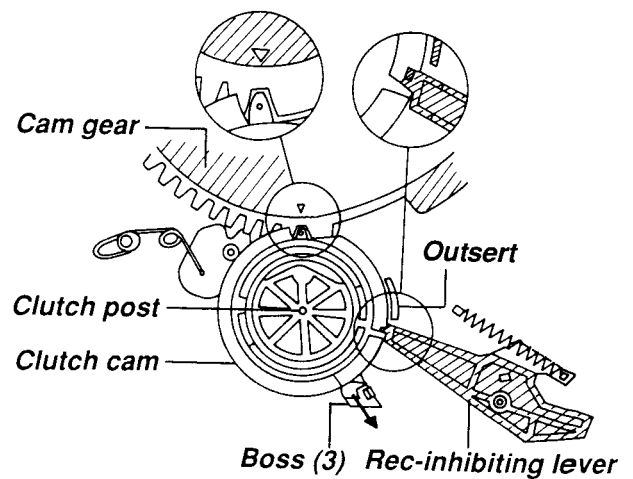


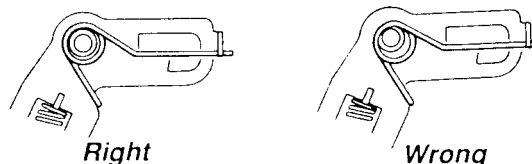
Fig. 4-14-3

### 1-4-15. Pinch Roller Assembly Replacement

1. Remove the T-soft brake. (Refer to item "1-4-11. T-soft Brake Replacement".)
2. Remove the S-soft brake. (Refer to item "1-4-9. S-soft Brake Replacement".)
3. Turn the main base upside down.
4. Remove the stop ring (1).
5. Place the main base with the right side up.
6. Remove the pinch roller assembly and the pinch torsion spring.
7. Apply grease to a new pinch roller assembly. (Refer to "Apply grease (2)".)
8. Attach the pinch torsion spring to the pinch lever assembly and then slightly insert the shaft of the pinch lever assembly into the sleeve hole (3) on the main base.
9. Remove the pinch lever spring from the hook of the pinch lever assembly, hook it on the post (4). Then, insert the pinch lever assembly deeply into the sleeve and insert the barring (5) into the groove (6) without any clearance.
10. Turn the main base upside down with the pinch lever assembly still held from the right side of the main base.
11. Mount the stop ring on the shaft.
12. Place the main base with the right side up and attach the T and S-soft brakes.

### Note:

- When attaching the pinch roller assembly, the pinch torsion spring may detach. At this time, after removing once the pinch roller assembly, put pinch torsion spring again and attach pinch roller again.



- Take care not to touch the pinch roller, or not to soil it.

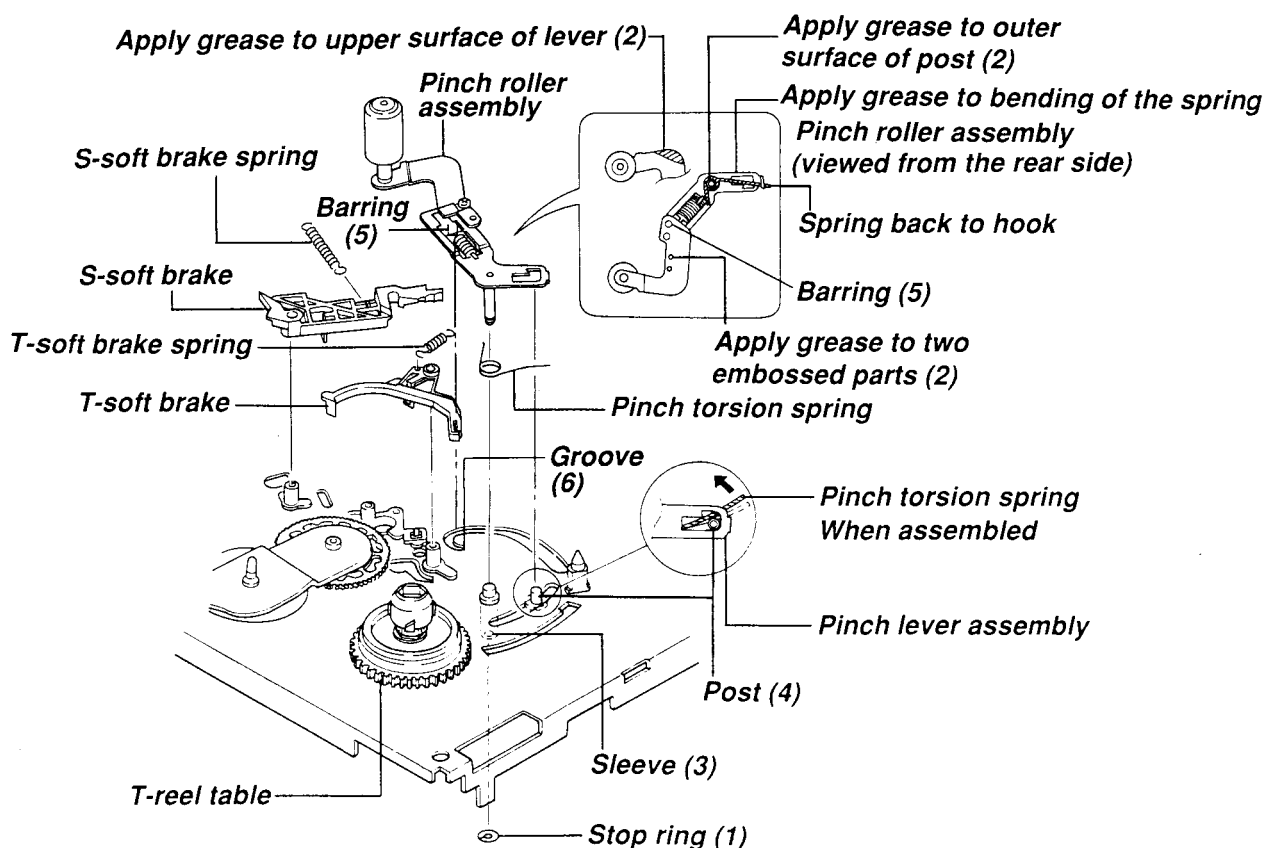


Fig. 4-15-1



### 1-4-16. Cam Gear Replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-Soft Brake Replacement".)
2. Turn the main base upside-down.
3. Remove the clutch holder, clutch assembly and the clutch cam. (Refer to item "1-4-14. Clutch System Parts Replacement".)
4. Remove stop ring (3) and remove the relay gear.
5. Remove stop ring (1) and remove the cam gear upward by releasing the hook (4).
6. Apply grease to a new cam gear. (Refer to Fig. 4-16-2 "View of cam gear".)
7. Press the T-loading link assembly and the S-loading link assembly in the direction of the arrows (A) and (B) respectively.
8. Set the hole (D) on the mode drive slider, hole (E) on the band brake lever and the hole (F) on the P. OSC drive lever, respectively, to each hole on the main base.
9. Press the moving clutch lever in the direction of the arrow (G).
10. Move the claw (1) in the direction of the arrow (C) and mount the cam gear so that the hole (H) on the cam gear can match the hole on the main base.
11. When reassembling, used the removing steps in the reverse order.
12. After completion of the assembly, make sure by turning the loading belt that the cam gear and its peripheral parts can function properly.

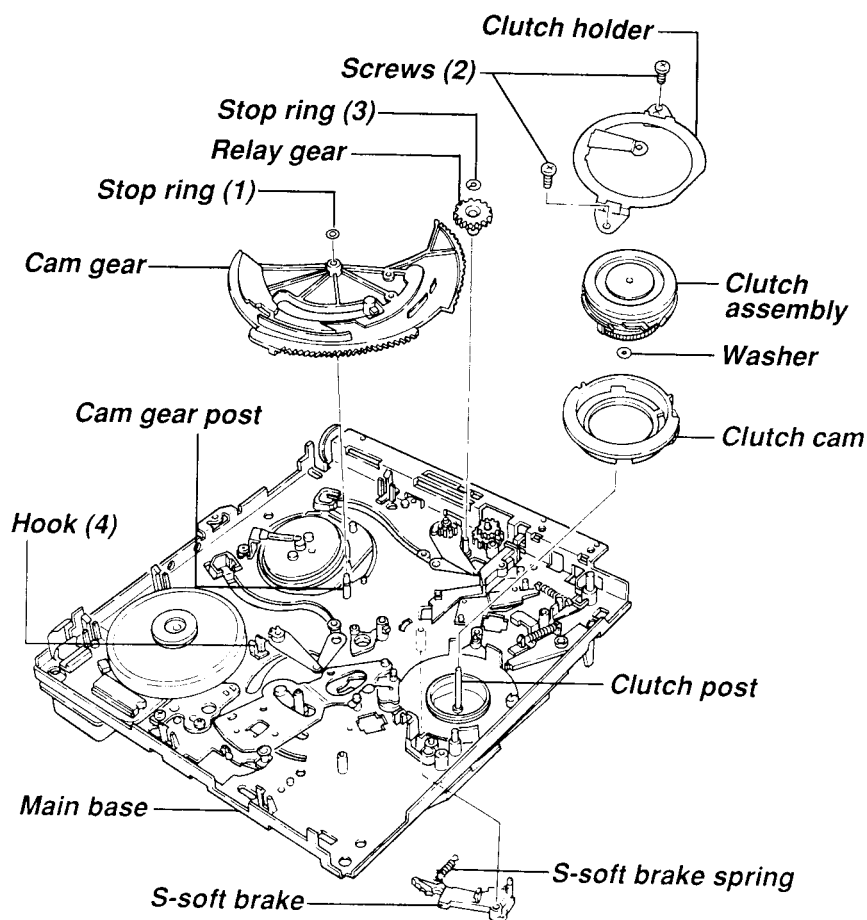


Fig. 4-16-1

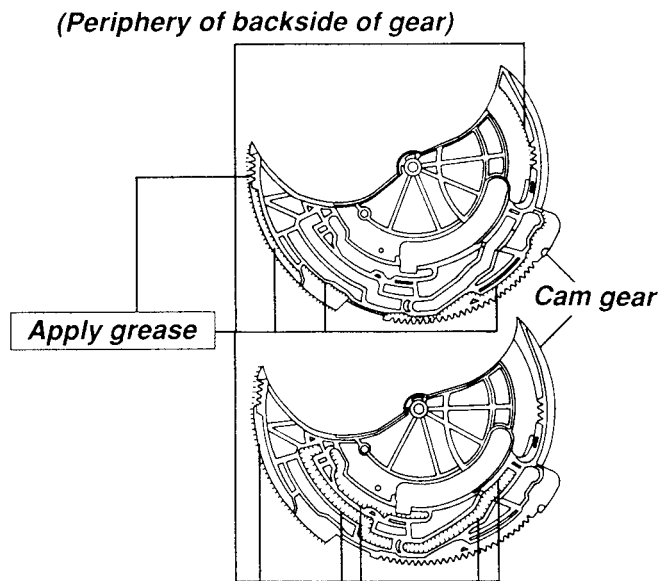


Fig. 4-16-2 View of cam gear

**Note:**

- The parts enclosed in a square require to perform phase matching with the cam gear.

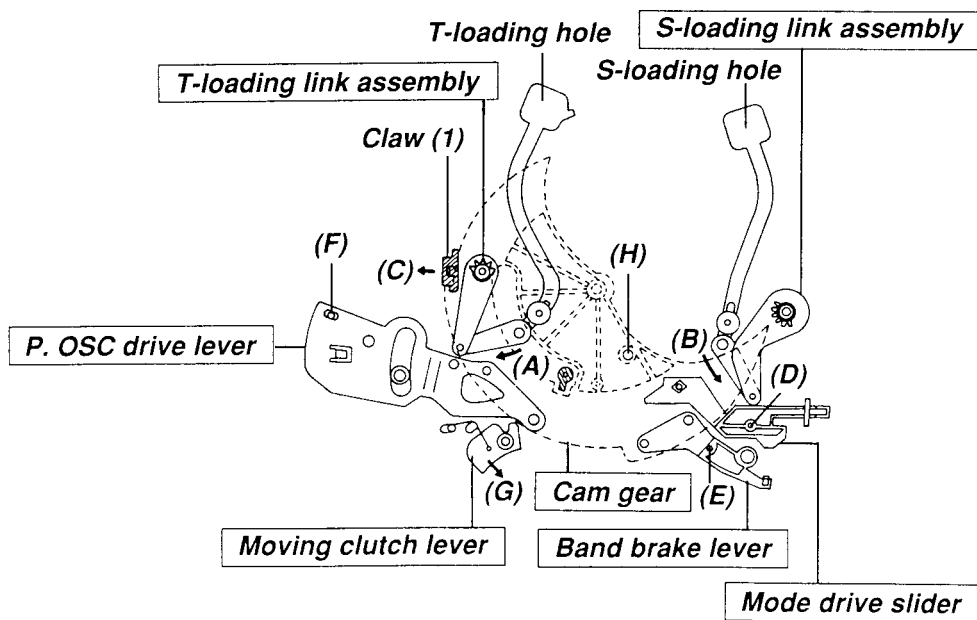


Fig. 4-16-3 Phase matching in assembling the cam gear

#### 1-4-17. P. OSC Drive Lever Replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-Soft Brake Replacement".)
2. Remove the T-soft brake to dismount the pinch roller assembly and the torsion spring. (Refer to item "1-4-15. Pinch Roller Assembly Replacement".)
3. Turn the main base upside-down.
4. Remove the stop ring (1) and remove the relay gear. (Refer to item "1-4-18. Relay Gear Replacement".)
5. Remove the clutch holder, clutch assembly and the clutch cam. (Refer to item "1-4-14. (2) Clutch cam Replacement".)
6. Remove the stop ring (2) and bend the claw (3) in the direction of the arrow (A) to remove the cam gear upward. (Refer to item "1-4-6. Cam Gear Replacement".)
7. Remove the P. OSC drive lever in the direction of the arrow (B).
8. Apply grease to the portion (4) at the new P. OSC drive lever. (Refer to Fig 4-17-2.)
9. Replace the P. OSC drive lever by reversing above procedures. When installing, insert the barring (6) of the P. OSC drive lever into the hole (5) on the main base and also insert the lock plate of the P. OSC drive lever into the hole (7) on the main base in the direction of the arrow (C).

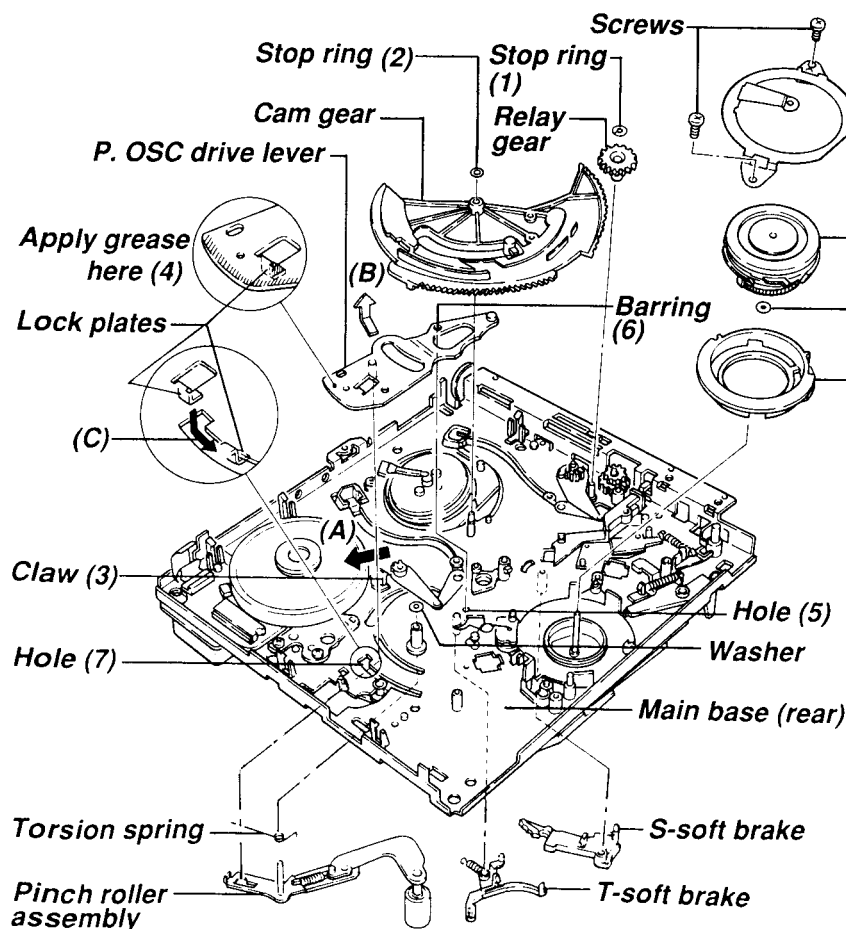


Fig. 4-17-1 P. OSC drive lever replacement

#### 1-4-18. Relay Gear Replacement

1. Remove the stop ring (1) and remove the relay gear upward.
2. Apply grease to the periphery of the gear (two parts) of the new relay gear. Also apply grease to the outer surface of the relay gear post.
3. Remount the relay gear in the reverse order of removal. (Note: Gear phase can be adjusted arbitrarily.)

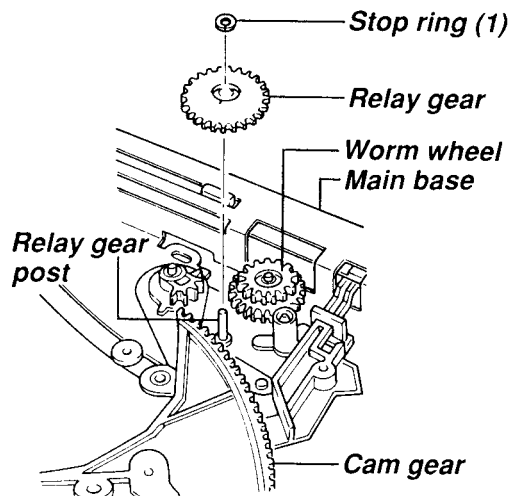


Fig. 4-18-1 Relay gear replacement

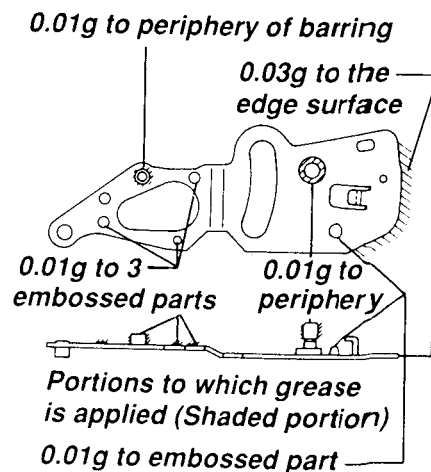


Fig. 4-17-2

### 1-4-19. S, T-Loading Link Assemblies Replacement

1. Remove the clutch holder, clutch assembly and the clutch cam. (Refer to item "1-4-14. (2) Clutch cam replacement".) In this case, the main base is turned upside-down.
2. Remove the relay gear. (Refer to item "1-4-18. Relay Gear Replacement".)
3. Remove the cam gear. (Refer to item "1-4-16. Cam Gear Replacement".)
4. Place the main base with the right side up.
5. Remove the slider stopper (2) and the torsion spring (4) from the S-slider. (When replacing the T-loading link assembly, remove the slider stopper (3) and the torsion spring (5) from the T-slider.)
6. Turn the main base upside-down.
7. Remove the stop ring (1) and remove the S-loading link assembly. (When replacing the T-loading link assembly, remove the T-loading link assembly.)
8. When remounting, use the reverse procedures.

#### Note:

- For items 5 to 8., refer to item "1-4-3. (7) S, T-sliders replacement".)

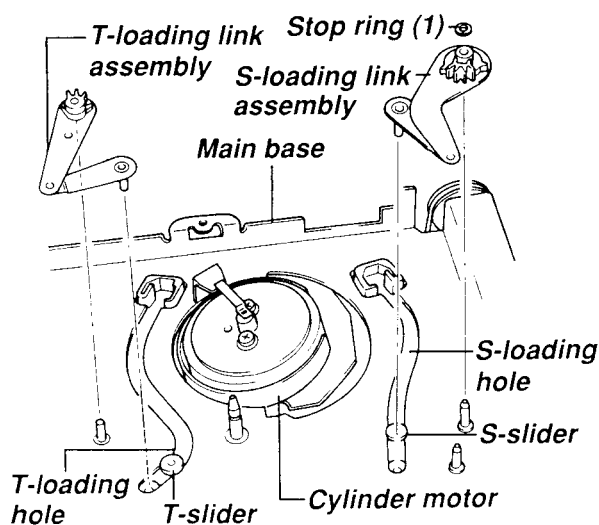


Fig. 4-19-1 T, S-loading link assemblies replacement

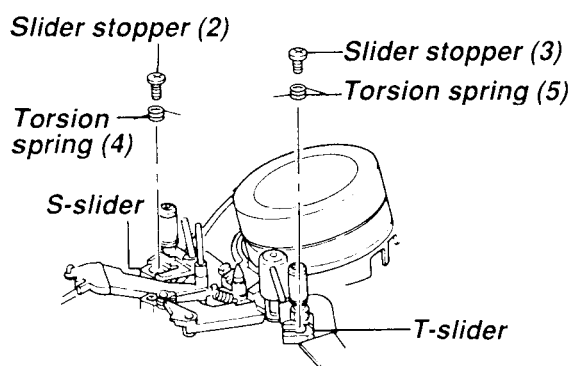


Fig. 4-19-2

### 1-4-20. Worm Wheel Replacement

1. Remove the S-main brake lever and T-main brake lever assembly and then remove the main brake charge lever. (Refer to item "1-4-7. (2) Main brake charge lever replacement".)
2. Remove the loading belt and then loading motor assembly. (Refer to item "1-4-4. Loading Motor Assembly Replacement".)
3. Remove the drive shaft assembly. (Refer to item "1-4-6. Drive Shaft Assembly Replacement".)
4. Remove the relay gear by detaching the stop ring (2) (Refer to item "1-4-18. Relay Gear Replacement".)
5. Remove the worm wheel by detaching the stop ring (1).
6. Apply grease the outer surface of the gear (2 portions) of the new worm wheel. Also apply grease to the periphery of the gear post.
7. Remount the worm wheel in the reverse order of removal.  
(Gear phase can be adjusted arbitrarily.)

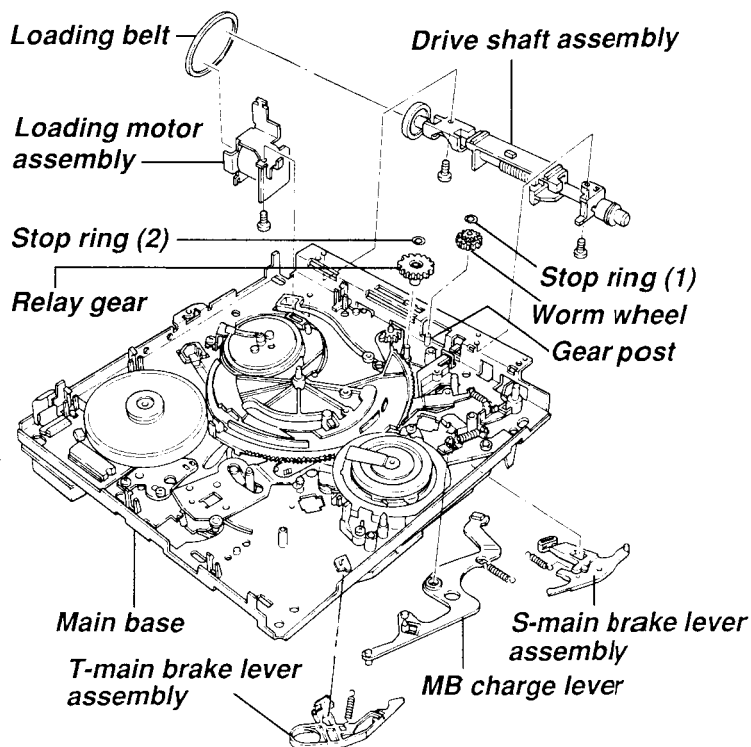


Fig. 4-20-1

### 1-4-21. OSC Drive Lever Replacement

1. Remove the T-soft brake. (Refer to item "1-4-11. T-Soft Brake Replacement".)
2. Remove the S-soft brake. (Refer to item "1-4-9. S-Soft Brake Replacement".)
3. Remove the pinch roller assembly. (Refer to item "1-4-15. Pinch Roller Assembly Replacement".)
4. Remove the OSC guide lever assembly and the torsion spring (2) by detaching the nut (1). (Refer to item "1-4-3. (9) OSC guide lever assembly replacement".)
5. Remove the OSC drive lever assembly in the direction of the arrow (B). (Refer to Fig. 4-21-2.)
6. Remount the OSC drive lever in the reverse order of removal.
7. When the OSC guide lever assembly is replaced, perform the OSC guide lever adjustment. (Refer to item 1-5-4 (3) 5))

#### Note:

- Align the O mark shown by (A)' on the OSC drive lever and the gear (A) at the left end of the OSC lever.

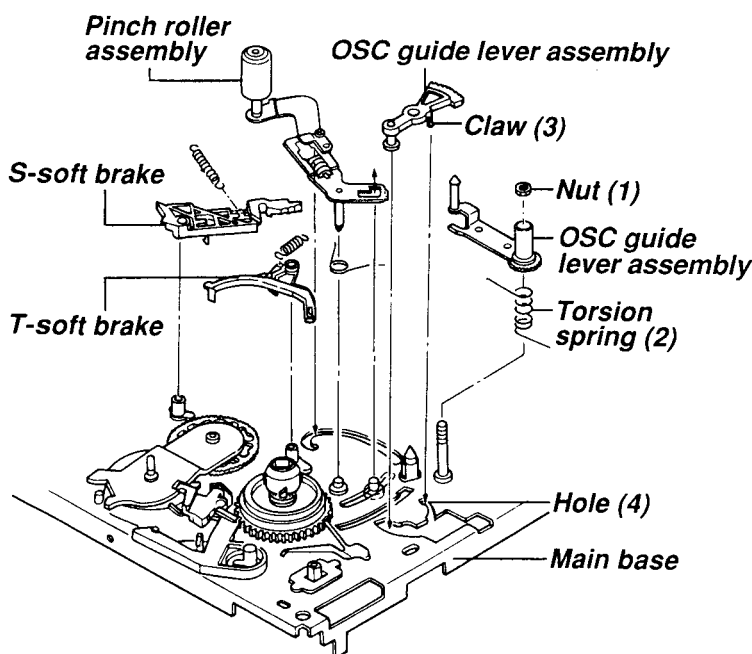


Fig. 4-21-1

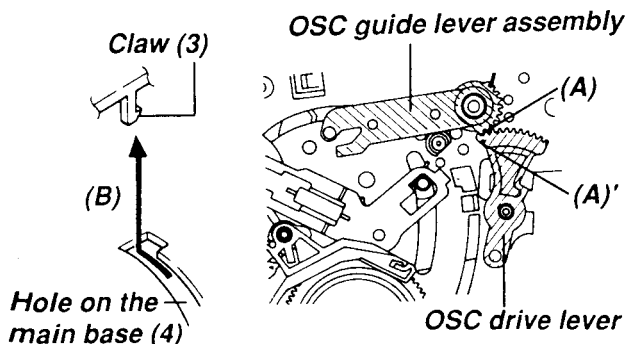


Fig. 4-21-2

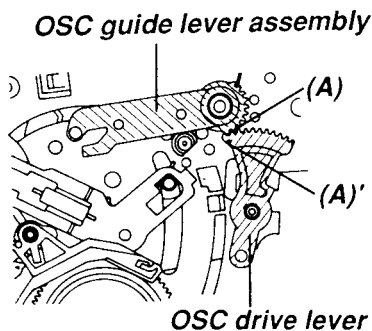


Fig. 4-21-3

### 1-4-22. Band Brake Lever Assembly Replacement

1. Remove the tension regulator assembly, band brake assembly and the band holder as a unit at a time. (Refer to item "1-4-26. (1), (2), (4)".)
2. Turn the deck upside-down and remove the cam gear. (Refer to item "1-4-16. Cam Gear Replacement".)
3. Remove the spring, taking care that the spring is not stretched or deformed. Slide the mode drive slider in the direction of the arrow (A).
4. Energize the tension spring lever in the direction of the arrow (B) and remove the band brake lever assembly.
5. Remount a new band brake lever assembly by reversing above procedures.
6. After all parts are assembled, check position of the tension pole and its adjustment and check the back tension. (Refer to items "1-5-2. Check of Tension Pole Position and 1-5-3. Reel Torque Check".)

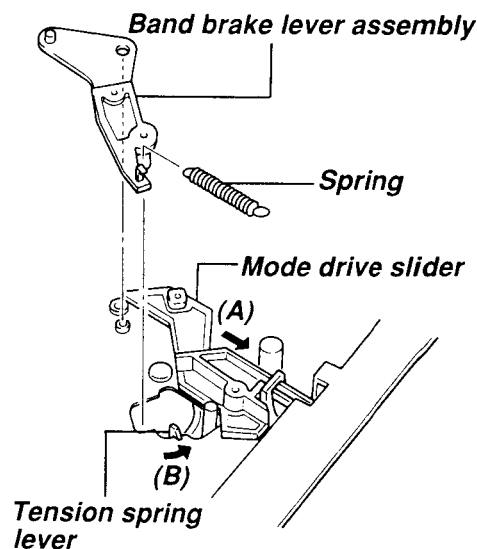


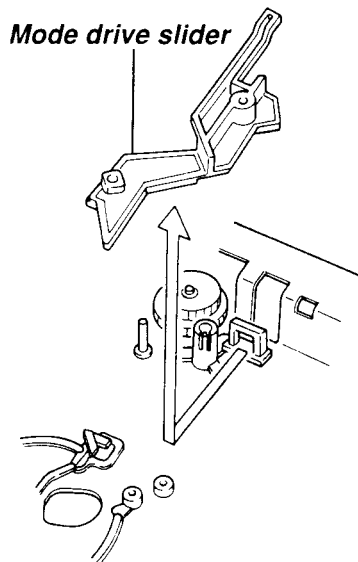
Fig. 4-22-1

#### 1-4-23. Mode Drive Slider Replacement

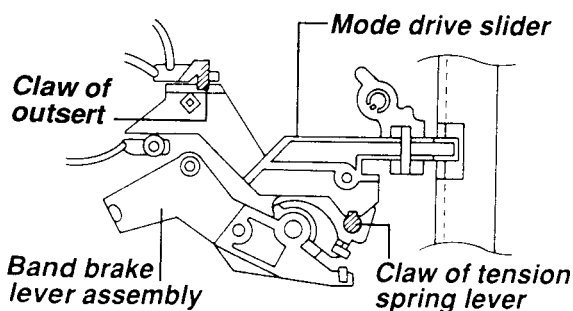
1. Remove the cam gear. (Refer to item "1-4-16. Cam Gear Replacement".)
2. Remove the band brake lever assembly. (Refer to item "1-4-22. Band Brake Lever Assembly Replacement".)
3. Move the mode drive slider to the left and pull it upward. (Refer to Fig. 4-23-1.)
4. Replace the mode drive slider in the reverse order of removal.

**Precautions in the installation: (Refer to Fig. 4-23-2.)**

- Make sure that the mode drive slider is gripped in the claw of the outset on the main base. (The band brake lever assembly is attached.)
- Make sure that the mode drive slider is gripped in the claw on the tension spring lever.



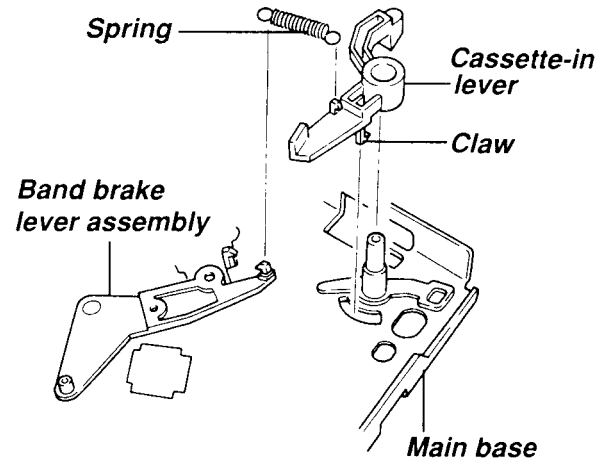
**Fig. 4-23-1**



**Fig. 4-23-2**

#### 1-4-24. Cassette-in Lever Replacement

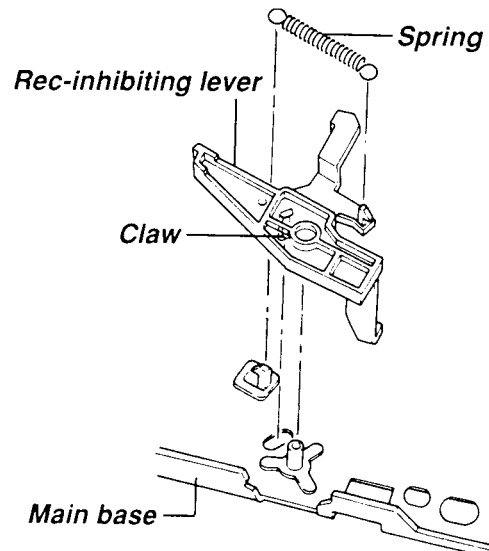
1. Remove the spring from the hooks of the cassette-in lever and the band brake lever assembly, taking care not to stretch or deform the spring.
2. Off-hook the claw hooked on the main base to remove the cassette-in lever.
3. When remounting the cassette-in lever, use the above steps in reverse order.



**Fig. 4-24-1 Cassette-in lever replacement**

#### 1-4-25. Rec-inhibiting Lever Replacement

1. Remove the clutch cam. (Refer to item "1-4-14. (2) Clutch cam replacement".)
2. Remove the spring from the hooks of the main base and the rec-inhibiting lever, taking care not to stretch or deform the spring.
3. Off-hook the claw hooked on the main base and remove the rec-inhibiting lever.
4. Replace the rec-inhibiting lever by reversing above procedures.
5. Install the clutch cam. (Refer to item "1-4-14. (2) Clutch cam replacement".)
6. Reinstall the clutch assembly and clutch holder. (Refer to item "1-4-14. (1) Clutch assembly replacement".)



**Fig. 4-25-1**

## 1-4-26. Tension Regulator Parts Replacement

### (1) Tension regulator assembly replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-soft Brake Replacement".)
2. Remove the tension spring, taking care not to stretch or deform the spring.
3. Off-hook the claw of the outset at the main base hooked on the shaft of the tension regulator assembly and remove the tension regulator assembly upward. Note that the outset hook at the main base is not deformed.
4. Remove the band brake from the hook of the tension regulator assembly. Take care that the felt surface of the band brake is not stained, bent or damaged.
5. Clean the shaft of a new tension regulator assembly and then apply one or two drops of oil. When replacing the tension regulator assembly, perform the previous steps in reverse order. Take care not to apply oil to the tension pole.
6. Check position of the tension pole and its adjustment and check the back tension. (Refer to items "1-5-2. Check of Tension Pole Position and 1-5-3. Reel Torque Check".)

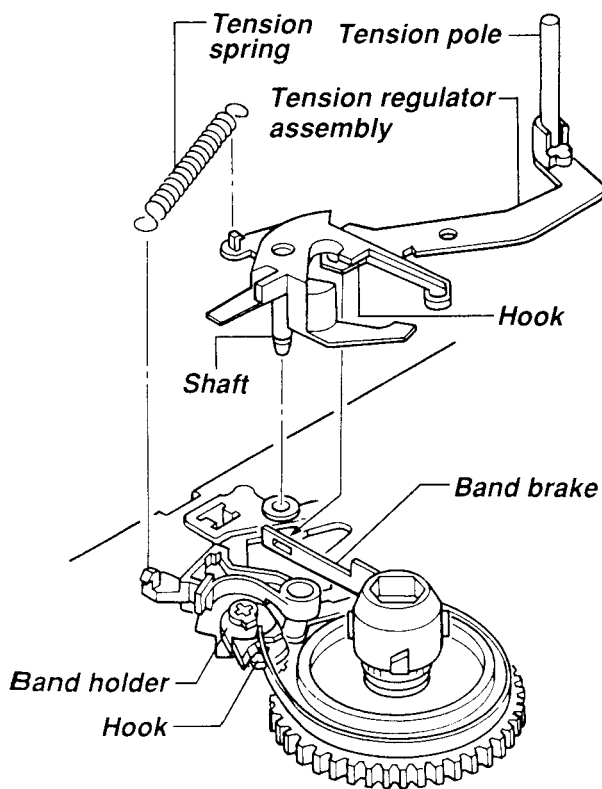


Fig. 4-26-1

### (2) Band brake replacement

1. Remove the S-soft brake. (Refer to item "1-4-9. S-soft Brake Replacement".)
2. Remove the tension regulator. (Refer to item "1-4-26. (1) Tension regulator assembly replacement".)
3. Remove the band brake from the hook of the band holder.

4. When reinstalling a new band brake, perform the previous steps in the reverse order. Take care not to stain or damage the band brake.
5. Check position of the tension pole and its adjustment and check the back tension. (Refer to items "1-5-2. Check of Tension Pole Position and 1-5-3. Reel Torque Check".)

### (3) Tension spring lever replacement

1. Remove the tension spring, taking care not to stretch or deform the tension lever.
2. Move the tension spring lever close to the portion shown by the arrow (A), off-hook the claw hooked on the main base and then remove the tension spring lever upward.
3. Replace the tension spring lever by reversing above procedures.

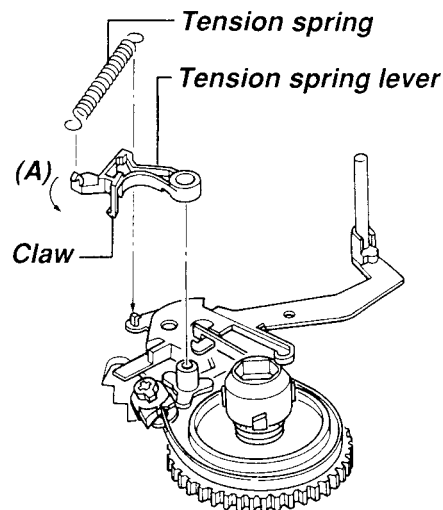


Fig. 4-26-2

### (4) Band holder replacement

1. Turn the band holder as shown in Fig. 4-26-3. (so that the protruded part of the band holder nearly matches the hole shape of the band holder.)
2. Remove the band holder upward.
3. Remove the band brake from the hook of the band holder. Take care not to stain, bend or break the band brake.
4. Replace the band holder in the reverse order of removal.
5. Check position of the tension pole and its adjustment and check the back tension. (Refer to items "1-5-2. Check of Tension Pole Position and 1-5-3. Reel Torque Check".)

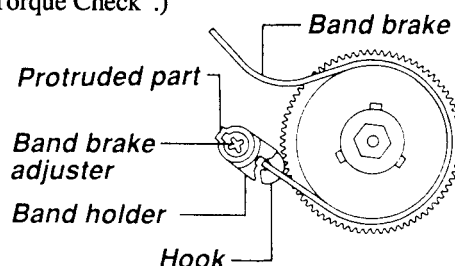


Fig. 4-26-3

### 1-4-27. Capstan Motor Replacement

1. Remove the FFC (1) for capstan motor and the reel belt (3).
2. Remove the mechanism P. C. board (2) from the rear of the deck. (The screws are not the same, so do not exchange when using.)

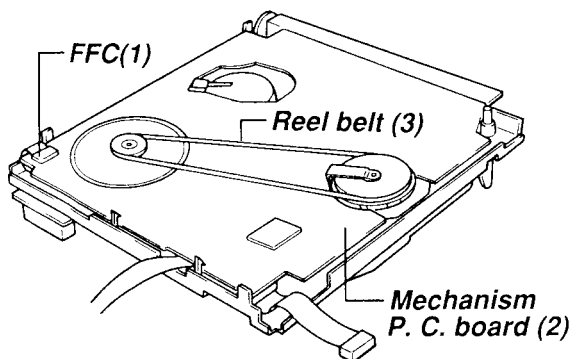


Fig. 4-27-1

3. Remove the FFC (4) from the capstan motor by sliding the connector holder in the direction shown by the arrow.

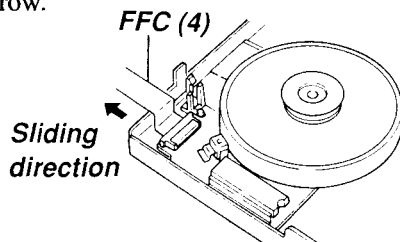


Fig. 4-27-2

4. Hold the capstan motor on the rear of the deck. Remove three screws (5) on the front side of the deck and then remove the motor.

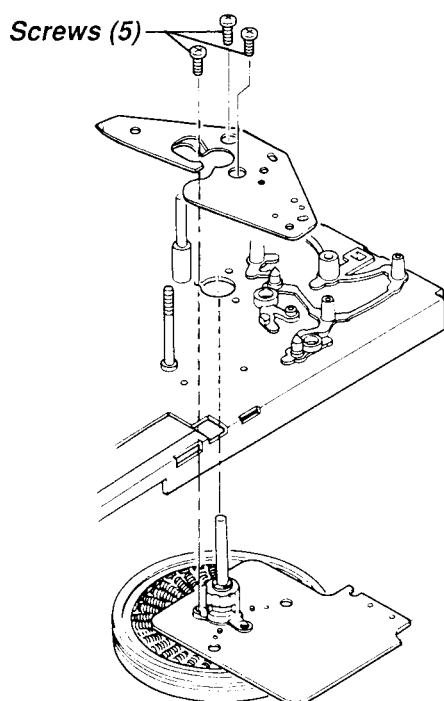


Fig. 4-27-3

5. First, position the capstan motor as shown in the following figure (6) and then mount the motor from the rear side of the deck, taking care not to damage the shaft, motor, etc.

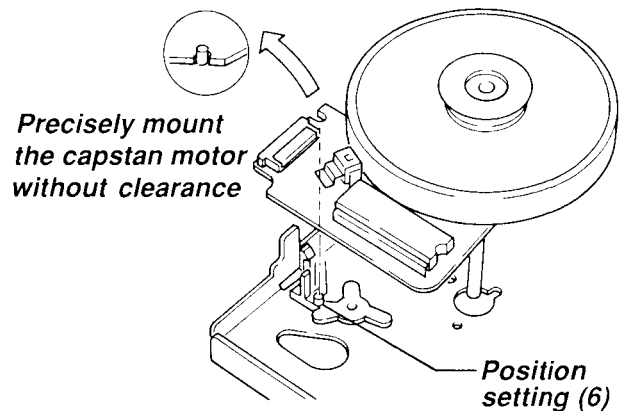


Fig. 4-27-4

6. Next, secure the capstan motor with three screws from the upper side of the deck. (In this case, do not use the screws once removed. Precisely mount the motor without any clearance.)

*Clearance not allowed.*

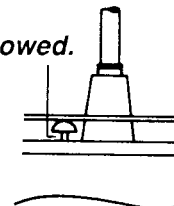


Fig. 4-27-5

7. Connect the FFC to the motor, taking care of its top and bottom side. It should be inserted with the metal terminal side facing downward. Insert the FFC and securely lock the connector by moving it as shown by the arrow.

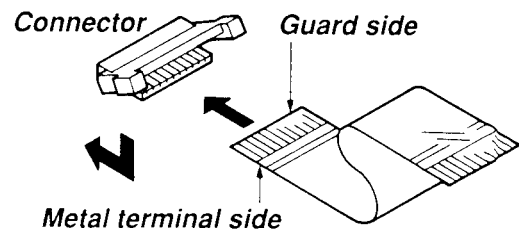


Fig. 4-27-6

8. Hereafter, proceed the remounting, using the removing procedures in the reverse order. When remounting, take care that the capstan motor, reel belt, FFC, etc. are not in contact with each other. Also take care the belt is not twisted and stained with grease.
9. After completion of the capstan motor replacement, check the transport characteristics according to the transport adjustment procedure. (Refer to item "1-5-4. (3) Tape transport system adjustment".)



#### 1-4-28. Capstan Thrust Replacement

1. Remove the screw (1) and then remove the capstan thrust (2).
2. When the capstan thrust is replaced, position the capstan thrust referring to the hole so that the contact part (3) is just above the capstan shaft.

##### Note:

- Take care not to deform the plate spring of the capstan thrust.

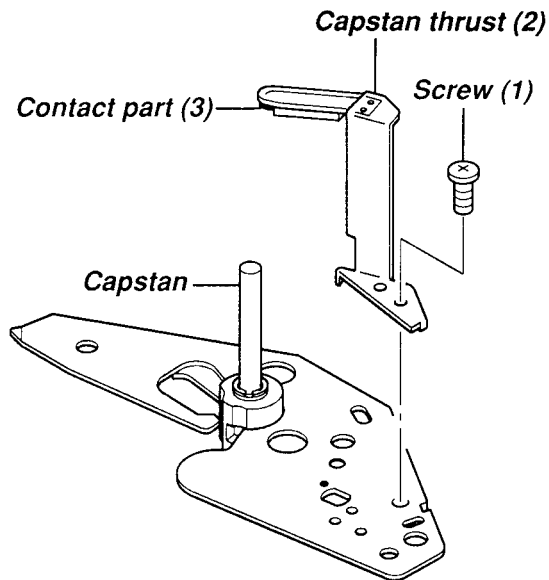


Fig 4-28-1

#### 1-4-29. Ground Brush Replacement

1. Remove the screw (1) and then remove the brush.
2. Clean the ground cap using alcohol.
3. Place the brush so that it can be contact with the center of the ground cap.

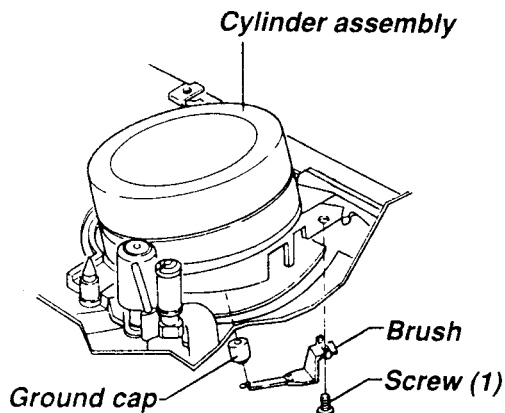


Fig. 4-29-1 Ground brush replacement

#### 1-5. Check and Adjustment

##### 1-5-1. How to Check Mechanism Positions

Turning the pulley of the drive shaft assembly allows to move to each position.

Use the position marks of the cam gear and the projection of the main base boss as guideline.

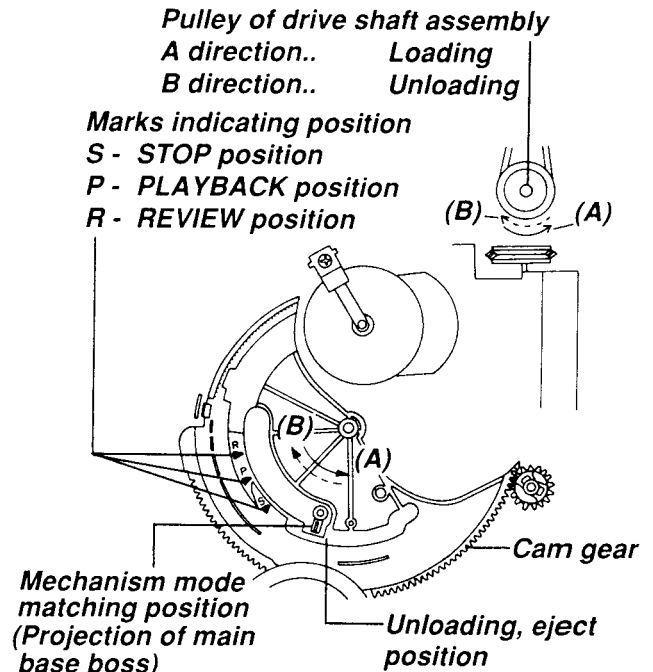


Fig. 5-1-1

##### 1-5-2. Check of Tension Pole Position

1. Check that the protruded part of band brake adjuster has turned to the direction of the lower right.
2. Set the deck to the play mode with the front loading assembly removed. (Shift the mode by referring to item "1-5-1. How to Check Mechanism Positions".)
3. Turn the S-reel table 3 – 4 turns in the clockwise direction.
4. Make sure the peripheral of the outset (shown by shaded arrow) of the tension regulator assembly is 1mm ± 0.5mm away from the main base edge as shown in Fig. 5-2-1.
5. If necessary, adjust the position by turning the band brake adjuster in the direction shown by ↔. After the adjustment, check to see the tension pole position by turning the S-reel table 3 – 4 turns clockwise.

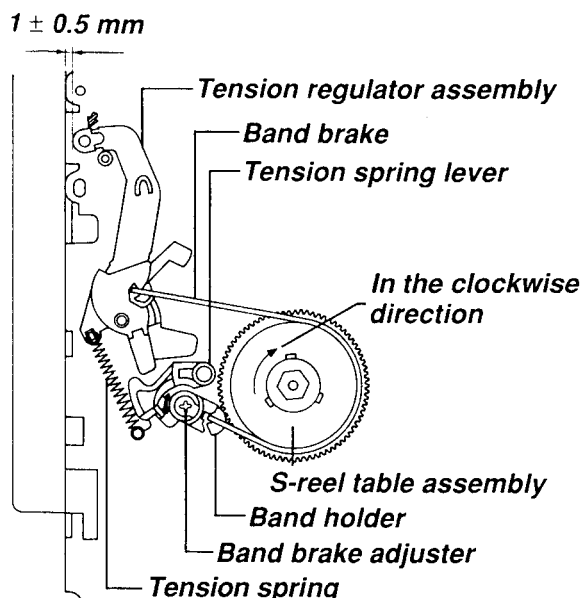


Fig. 5-2-1

### 1-5-3. Reel Torque Check

#### (1) Reel torque

1. REVIEW mode  
Poor torque may not wind the tape. On the other hand, excessive torque will cause damage to the tape during REVIEW mode.
2. Record/Playback (take-up side) mode  
Too little torque does not rewind the tape to the end. If too large torque, the tape may be stretched by excessive tension.
3. Inspection  
Rewind the torque cassette (recorded in SP mode) to the end, then check the torque values shown below:  

Review	212.5 ± 77.5g-cm
Record/Playback	85 ± 25g-cm

 For checking the method, refer to the following item (2).

#### (2) Reel torque and back tension check

1. First, record a TV broadcast program on the entire torque cassette tape (KT-300NR) in the SP mode.
2. Load the torque cassette in the VTR and feed forward the tape before proceeding with measurement.
3. Set the VTR to the REVIEW mode and feed the tape for about 15 sec., and then make sure the take-up torque of 135 – 290g-cm is obtained while observing the left torque meter.
4. After completion of step 3, set the VTR to the PLAY mode and feed the tape for about 30 sec. Read the right torque meter and check the torque of 60 – 110g-cm is obtained.
5. When the review torque and playback torque are out of limit, replace the clutch assembly.

6. When the clutch assembly and the idle gear are replaced, perform the reel torque check.
7. Confirmation and adjustment of the back tension are performed by using a back tension cassette gauge. First, make sure that the tension pole is positioned correctly. (Refer to item “1-5-2. Check of Tension Pole Position”.) Load a back tension cassette and set the VTR to the PLAY (SP) mode. Make sure the meter is indicating 30 – 45 gf-cm. If the value is out of limit, first make sure the tension lever spring is normal, and then replace the tension regulator assembly as required. (Refer to item “1-4-26. Tension Regulator Parts Replacement”.)

#### <Precautions for Use of Torque Cassette (KT-300NR)>

1. Before loading a torque cassette in a VTR, always remove tape slack. The tape slack can be removed by rotating the reel to its take-up direction. (The tape tends to slack when there is no reel brake actions.)
2. When the torque cassette is loaded, confirm followings:
  - Make sure the tape does not ride up or over the No. 8 cap. If it does, do not eject the tape but bring the tape to its correct position, taking care not to damage the tape.
  - Make sure the tape is not slackened. If slackened, operate the VTR in FF or REV mode and then stop the tape. Then make sure the tape is not slackened again.
  - After above confirmation, proceed to the reel torque adjustments and confirmation.
3. Cautions for removal of torque cassette
  - When removing the torque cassette from the VTR, set the VTR to the STOP mode and wait for several seconds. Then, make sure the tape is not slackened. Push the EJECT button to remove the cassette.
  - When removing the torque cassette from the VTR, also make sure the tape is not slackened inside the cassette lid before pulling the cassette from the VTR. If the tape is slackened inside the lid, carefully bring the tape in place and then pull the cassette.
4. If the previous precautions 1, 2 and 3 are not performed properly, the tape may be damaged and correct measurements can not be performed.
5. Do not use worn out or damaged tape, if used they may damage video heads on the cylinder. In such a case always replace the tape with a new one. The replacement tape is of E-180, 6.01 ± 0.3m in length.

#### 1-5-4. Tape Transport System

The tape transport system has been precisely adjusted in the factory, so no check and alignment are necessary except the followings:

- Noises observed on the screen
- Tape damage
- Parts, shown in the adjustment procedures for the tape system, item 1-4-3. were replaced.

Electrical signal output terminal required for adjustment differs depending upon the models. Refer to the test pin location in the Electrical Adjustment Section.

#### <Adjustment reference>

Lower flange height of No. 8 guide is used as the basic reference for the transport adjustment. To keep height of the No. 8 guide, do not apply excessive force onto the main base to prevent the main base from deformation. In case of adjustment for SP mode only unit, please use SP mode alignment tape (ST-C1) instead of LP mode alignment tape (ST-C3), and adjust finely.

#### (1) Location of tape transport adjustment

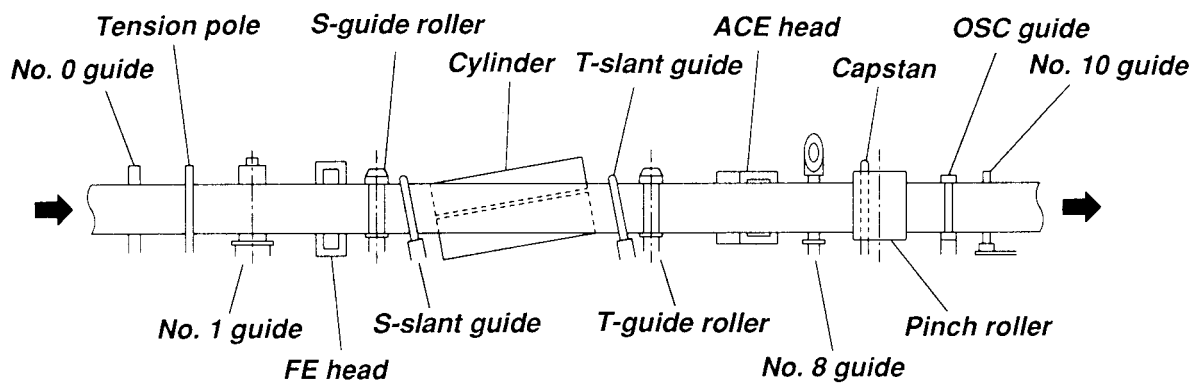


Fig. 5-4-1 Tape travel diagram

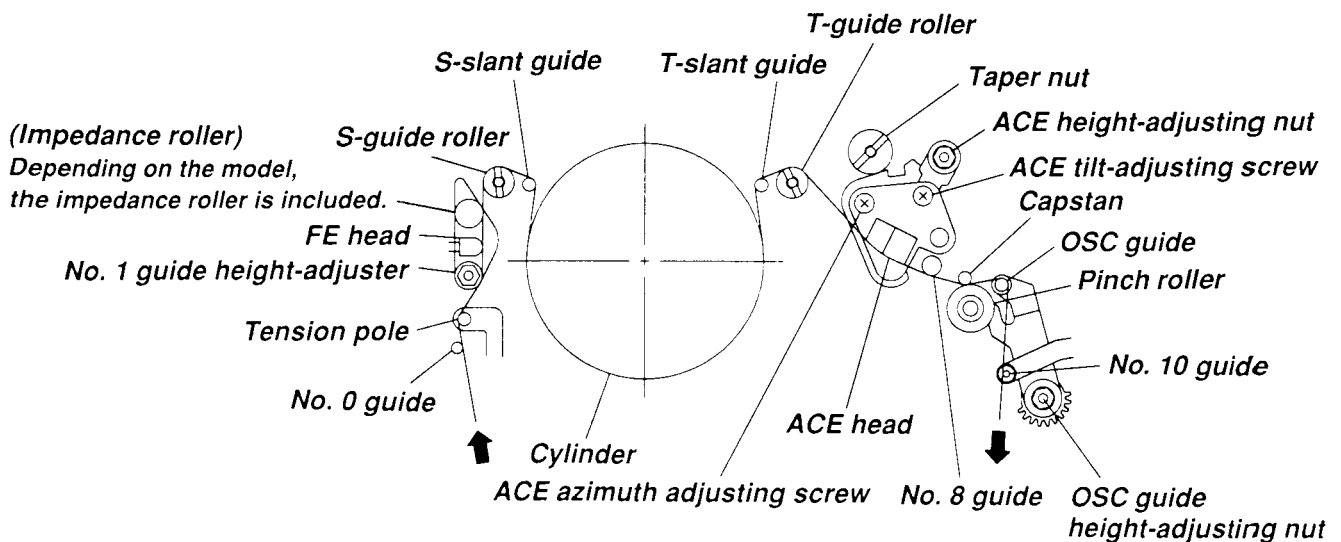
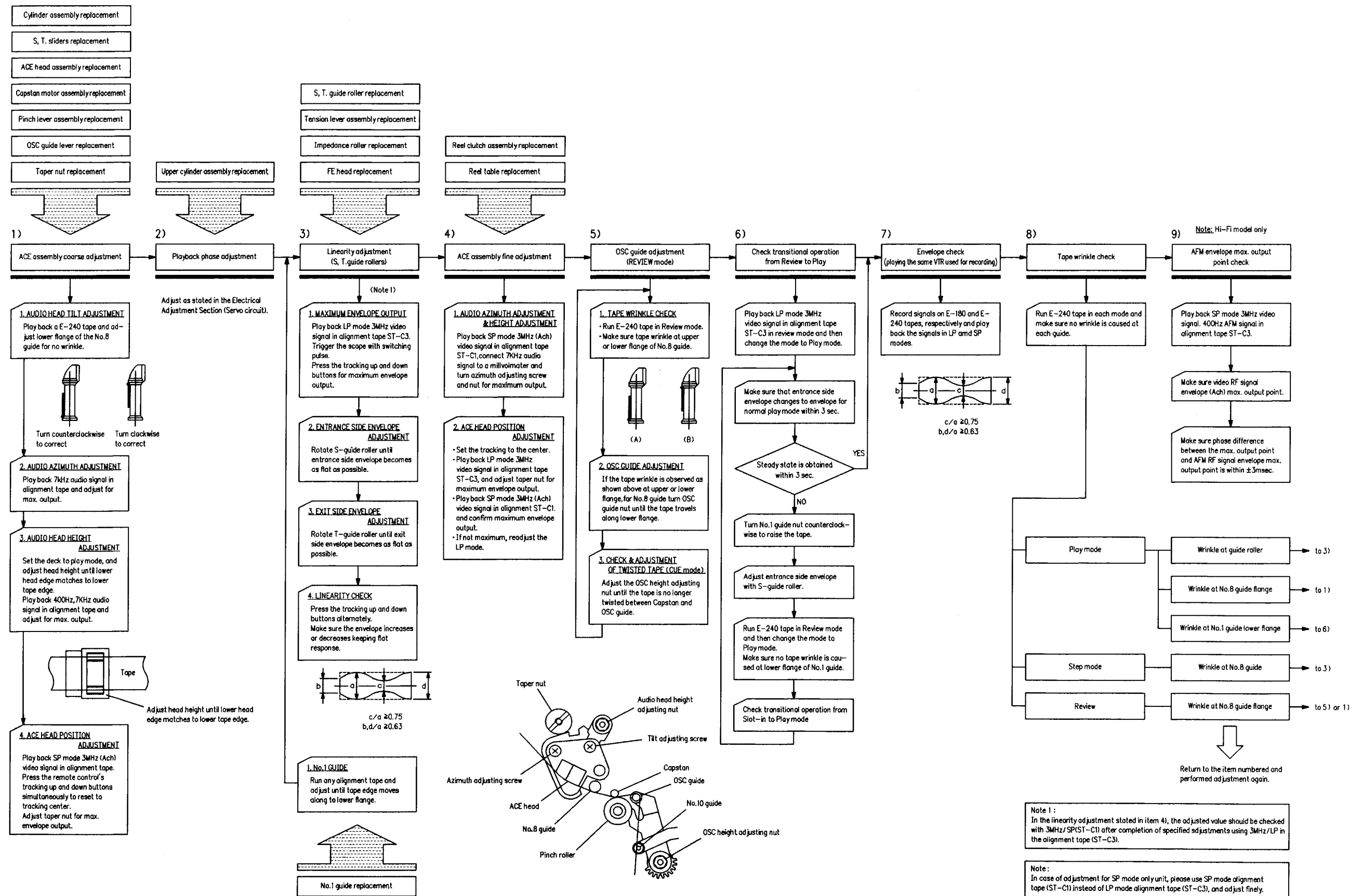


Fig. 5-4-2 Location of tape transport adjustment

### (2) Tape transport system adjustment flow chart



(3) Tape transport system adjustment

<Pre-adjustment>

When the part (s) listed in Table 5-4-1 is replaced, perform required adjustments by referring to procedures for the tape transport system. When the part(s) listed in Table 5-4-1 is replaced, the tape path may be changed and may damage alignment tape. To prevent this, first run a E-240 tape and make sure excessive tape wrinkle does not occur at each tape guide.

1. If tape wrinkle is observed at the S, T-guide rollers, turn the S, T-guide rollers until wrinkle disappears.
2. If tape wrinkle is observed at the No. 8 guide, perform the tilt adjustment of the ACE head.
3. If tape wrinkle is observed at the OSC guide, perform the OSC guide height adjustment.

<Adjustment procedures>

1) ACE head assembly coarse adjustment

a. ACE tilt adjustment

1. Play back a E-240 tape and observe running condition of the tape at the lower flange of No. 8 guide.
2. Adjust the ACE tilt adjusting screw until tape wrinkle is caused at the lower flange of No. 8 guide as shown in Fig. 5-4-4 (A).
3. Turn the ACE tilt adjusting screw counterclockwise until the tape travels along the lower flange as shown in Fig. 5-4-4 (B).

b. Audio azimuth adjustment

1. Play back the 400Hz and 7kHz audio signals on the alignment tape ST-C1 in the SP mode.
2. Connect a millivoltmeter or oscilloscope to the audio line output terminal.
3. Turn the ACE azimuth adjusting screw to obtain maximum audio output.

c. Audio head height adjustment

1. Run the alignment tape (ST-C1) in the playback mode.
2. Observe surface of the audio head using a dental mirror.
3. Turn the ACE height adjusting nut so that lower tape edge matches to the lower edge of the control head.
4. Play back the 400Hz, 7kHz audio signal in the alignment tape (ST-C1) and adjust the head height for maximum audio output.

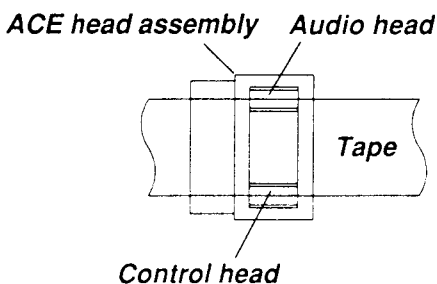


Fig. 5-4-5 Head height

Table 5-4-1	
Parts replacement	Adjustment procedure
<ul style="list-style-type: none"><li>• Cylinder assembly</li><li>• S, T-sliders</li><li>• ACE head</li><li>• Pinch lever assembly</li><li>• Capstan motor</li><li>• OSC guide lever assembly</li><li>• Taper nut</li></ul>	From item 1)
<ul style="list-style-type: none"><li>• Upper cylinder</li></ul>	From item 2)
<ul style="list-style-type: none"><li>• S, T-guide rollers</li><li>• Tension lever assembly</li><li>• FE head</li><li>• No. 8 guide sleeve</li><li>• No. 1 guide</li></ul>	From item 3)
<ul style="list-style-type: none"><li>• Reel clutch assembly</li><li>• S, T-reel tables</li></ul>	From item 4)

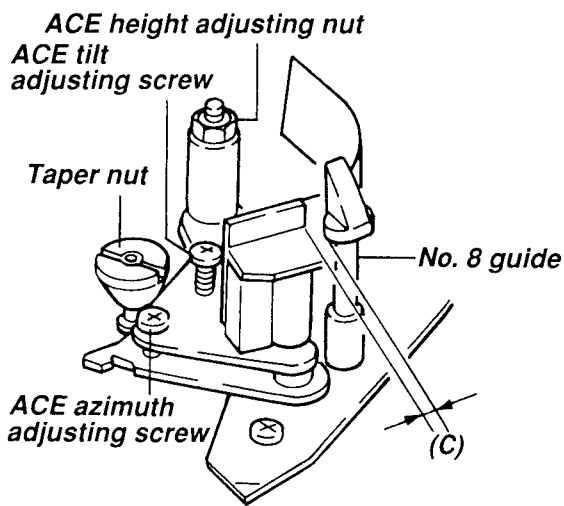


Fig. 5-4-3

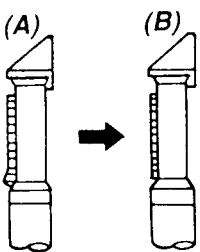


Fig. 5-4-4 Rough check of No. 8 guide

d. ACE head position pre-adjustment

1. Play back the 3MHz video signal in the alignment tape (ST-C1) in the SP mode.
2. Press the remote control's tracking up and down buttons to reset to tracking center, and adjust the taper nut for maximum video signal output after the tracking control is set at its center position.

Note:

- Confirm from Fig. 5-4-3 that clearance (C) is provided between the ACE head and No. 8 guide cap as shown in Fig. 5-4-3. (In usual, it is so designed as to leave about 1mm gap.) If there is no clearance, loosen the taper nut and perform the procedure (b) at the position displaced by 1 frame.

2) Playback phase adjustment

Perform the adjustment according to the methods stated in the electrical adjustment (servo circuit).

3) Linearity adjustment

1. Play back the LP mode 3MHz video signal on the alignment tape (ST-C3).
2. Trigger the scope with the switching pulse to issue the envelope signal output.
3. Make sure the video envelope waveform (in its maximum output) meets the specification shown in Fig. 5-4-6. Again make sure the same by playing back the SP mode 3MHz video signal on the alignment tape ST-C1. If not satisfied, adjust as follows:

Note:

- a = maximum output of the video RF envelope
- b = minimum output of the video RF envelope at the entrance side
- c = minimum output of the video RF envelope at the center point of cylinder

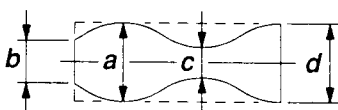


Fig. 5-4-6 Envelope waveform adjustment

d = minimum output of the video RF envelop at the exit side of cylinder

4. If the (A) section in Fig. 5-4-7 does not meet the specifications, adjust the S-guide roller in up or down direction.

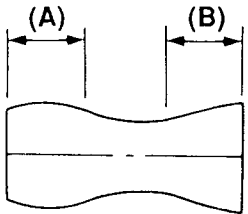


Fig. 5-4-7 Adjustment points

5. If the (B) section in Fig. 5-4-7 does not meet the specifications, adjust T-guide roller in up or down direction.
6. After completion of the adjustment(s), press the tracking up and down buttons and make sure video envelope variations are almost flat. Next, play back the 3MHz SP mode on the alignment tape (ST-C1) and makes the video RF envelope variations are also flat when the tracking buttons are pressed.
7. If the envelope varies as shown in Fig. 5-4-8, adjustment is required again.

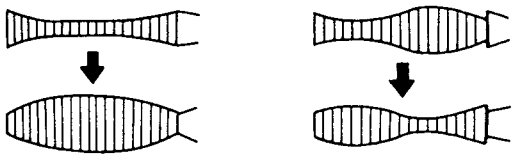


Fig. 5-4-8 Abnormal variation of the waveform

4) ACE head assembly fine adjustment

a. Tape wrinkle check at the lower flange of No. 8 guide

1. Check to see if any wrinkle is observed at the tape between the capstan and the OSC guide. If excessive twist is observed, adjust the OSC guide height until tape is no longer twisted and perform the adjustment 2.
2. If tape wrinkle is observed at the lower flange of No. 8 guide, adjust the ACE tilt adjusting screw counterclockwise as shown in Fig. 5-4-3 until the wrinkle disappears.
3. If a gap is observed between the lower flange of N guide and the lower edge of tape, turn the ACE tilt adjusting screw clockwise until the tape travels along the lower flange.

Note:

- This adjustment should be made using a beginning part of E-240 tape.

b. Azimuth adjustment

1. Play back the 400Hz, 7kHz audio signal on the alignment tape (ST-C1).
2. Adjust the ACE azimuth adjusting screw for maximum audio output as shown in Fig. 5-4-3.

### c. Audio head height adjustment

1. Play back the alignment tape.
2. Adjust the ACE height adjusting nut for maximum audio output.

### d. ACE head position adjustment

1. Play back the LP mode 3MHz envelope on the alignment tape (ST-C3).
2. Press the remote control's tracking up and down buttons simultaneously to reset to tracking center.
3. Trigger the oscilloscope with the video switching pulse and observe the video RF envelope waveform.
4. Turn the taper nut and fix the tape nut at the position where the video envelope reaches a peak level.
5. Play back the SP mode 3MHz video signal on the alignment tape (ST-C1).
6. Make sure the envelope output is maximum when the tracking is set to the center.
  - If no envelope output is obtained with the tracking center, again adjust it for maximum envelope output in SP and LP modes. (When envelope output is maximum in the LP mode at the tracking center, difference with the case in the SP mode is within 3msec.)
7. Play back the SP mode 400Hz, 7kHz audio signal on the alignment tape ST-C1 and make sure the audio output is maximum.

### 5) OSC guide lever adjustment

1. Set the VTR to Cue mode with E-240 tape (at beginning portion) loaded. Switch the Cue mode to the review mode when the tape has been rewound into the T-reel table to some extent.
2. Check tape wrinkle at the upper and lower flange of No. 8 guide. Adjust the OSC nut in Fig. 5-4-9 so that the tape runs without tape wrinkle.
3. Set the VTR to the Cue mode again and make sure the tape is not twisted between the capstan and the OSC guide. If twisted, adjust the OSC guide height and the adjustment in step 1 again.

#### Note:

- Previously modify the cassette of E-240 tape for adjusting OSC by removing the lid. First consideration should be given to adjust so that the tape cannot be twisted in the CUE mode.

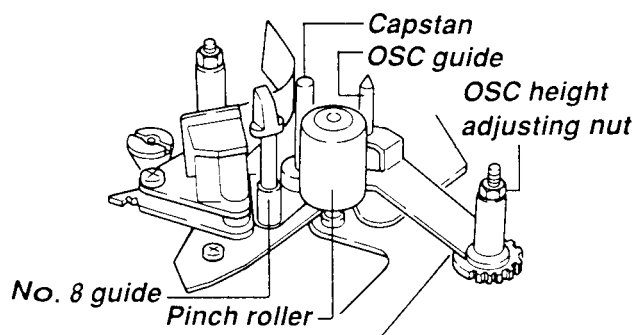


Fig. 5-4-9A OSC guide lever adjustment

### 6) Check for transitional operation from Review to Play

1. Play back the LP mode 3MHz video signal on the alignment tape ST-C3 in Review mode and observe the video RF envelope with the oscilloscope.
2. Switch the Review mode to the Play mode. When switched to the Play mode, make sure the entrance side envelope comes to an approximate steady state within 3 sec. as shown in Fig. 5-4-10. If it does not rise within 3 sec., take the following steps starting 4.
3. Switch the Cassette Slot-In mode to the Play mode. As in item 2., if it does not rise within 3 sec., adjust as follows.

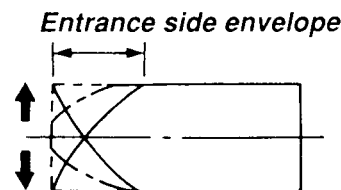


Fig. 5-4-10 Video envelope rising when operation mode is switched from review to play mode

4. Turn the No. 1 guide nut counterclockwise to adjust the lower flange height. Make sure the tape travels along the lower flange.
5. Since entrance side linearity varies as the height of the lower flange of the No. 1 guide is varied, adjust the S-guide roller to correct the linearity.
6. Check above items 2 and 3 to see that the video envelope rises within 3 sec. If not, repeat the adjustment from item 4.
7. Make sure no tape wrinkle is observed at the lower flange in the Play mode and the Review mode. If excessive tape wrinkle occurs, perform the adjustment from item 4 until the wrinkle disappears.

#### Note:

- If the rising characteristic is poor in Review mode, screen noise may occur in synchronous editing recording. Perform the adjustment carefully.

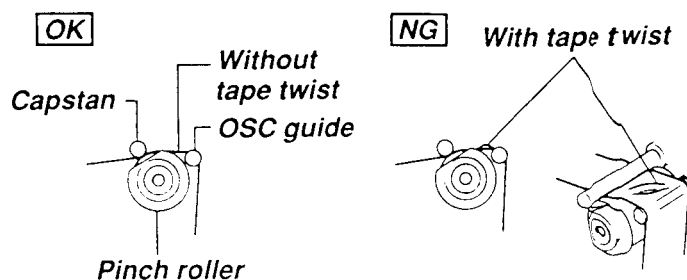
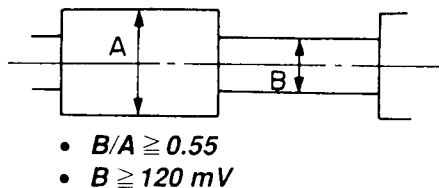


Fig. 5-4-9B Tape twist between Capstan and OSC guide on play & CUE mode

### 7) Envelope check

1. Make recordings and play back on E-180 and E-240 tapes in SP and LP modes and make sure the playback output envelope meets the specifications shown in Fig. 5-4-6.
2. In playback using the same video deck as used for the recording (with a E-180), the video envelope should meet the specification as shown in Fig. 5-4-11. (Check for both modes, SP and LP. )



**Fig. 5-4-11 Envelope output and output difference**

3. If the performance does not meet both specifications above 1 and 2 above, replace the upper cylinder assembly.
4. Set the video to LP mode with the E-180 tape loaded (at the beginning part) and check operation of the synchronous editing recording.
5. If picture noises are observed at the starting position of the editing, again adjust the height of No. 1 guide lower flange.

### 8) Tape wrinkle check

1. Playback the E-240 tape in the Play mode, CUE mode, Review mode and the frame feeding mode, and check each guide for wrinkle.
2. If excessive tape wrinkle is observed at the mode shown below, perform the associated adjustments also shown below.
  - a. Playback mode
    - Tape wrinkle at the S, T-guide rollers section  
Item 3) Linearity adjustment
    - Tape wrinkle at No. 8 guide flange  
Item 1) ACE head assembly coarse adjustment
    - Tape wrinkle at lower flange of No. 1 guide  
Item 6) Check for transitional operations from Review to Play, and Slot-In to Play
  - b. Review mode
    - Tape wrinkle at No. 8 guide  
Item 5) OSC guide lever adjustment, or  
Item 1) ACE head assembly coarse adjustment
  - c. Frame advance mode
    - Tape wrinkle at No. 8 guide  
Item 3) Linearity adjustment

### 9) Maximum AFM envelope output point check (Hi-Fi model)

1. Playback the SP mode 3MHz video signal and the 400Hz AFM signal on the alignment tape ST-C3.
2. Trigger the oscilloscope with the video switching pulse, adjust the tracking up and down buttons and check the control pulse phase at the maximum video envelope (Ach) output point.
3. Make sure the control pulse phase difference among each maximum point of AFM envelope, Ach and Bch is within  $\pm 3\text{m sec.}$  with the above point used as the basic reference.

#### Note:

- If the phase difference exceed 3m sec., replace the upper cylinder.

## 2. ELECTRICAL ADJUSTMENT

### <Test equipment required>

Adjustment will be performed with the following test equipment.

1. Color TV (Monitor)
2. Oscilloscope, 2 CHs, 15 MHz or higher with delay system
3. Frequency counter (7 digits or higher)
4. Millivoltmeter
5. Digital voltmeter
6. Tester (20 k ohm/V)
7. Audio generator
8. Audio attenuator
9. Alignment tapes  
Part code: ST-C1: 70909227, ST-C3: 70909264
10. Alignment screw driver (jig)
11. Color pattern generator
12. Video sweep generator

### <Color bar signal>

Color bar signals of 75 % recorded on the alignment tapes are shown in Fig. 2-1-1.

### <Specified input and output levels, and impedance>

- Video input: Negative sync, standard composite video signal 1 Vp-p, 75 ohm
- Video output: Same as the video input 1 Vp-p, 75 ohm
- Audio input: -5 dBs, more than 10 k ohm
- Audio output: -5 dBs, less than 1 k ohm

### Alignment sequence

Proceed the alignments in the sequence as shown in Fig. 2-1-2.

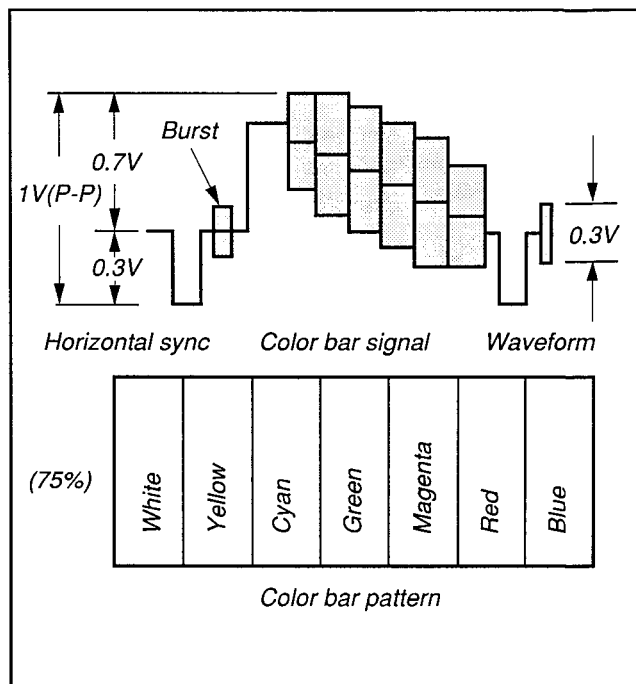


Fig. 2-1-1

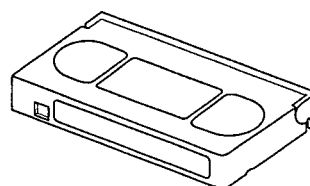
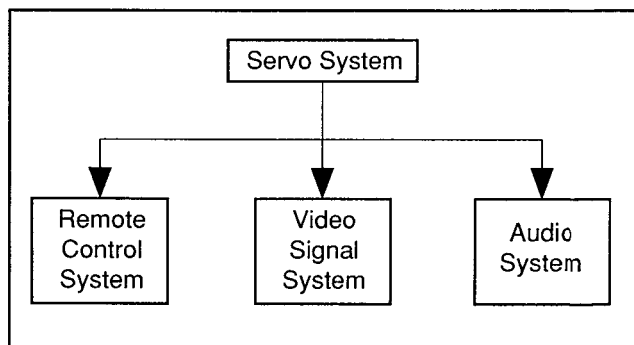


Fig. 2-1-2



## Alignment tape specifications

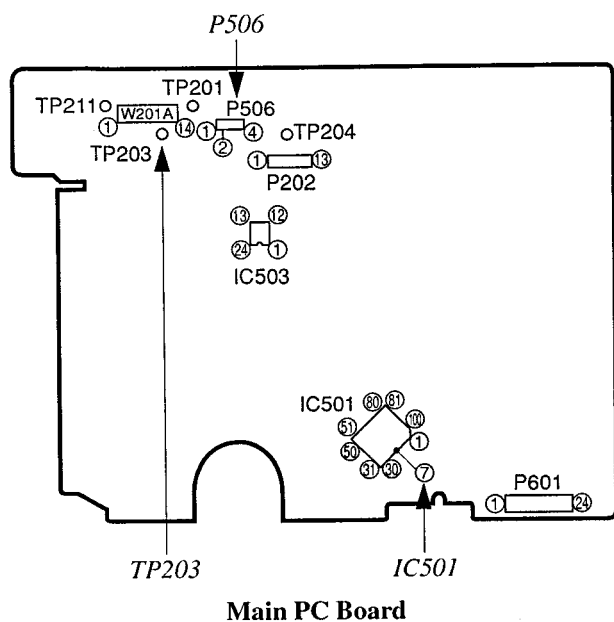
### [1] ST-C1

Segment	System	Playback Time (min.)	Video Signal	Audio Signal	Applications
1	PAL & SECAM	10	Mono Scope	1 kHz	Servo checks and adjustment
2	PAL & SECAM	10	3 MHz Ach	400 Hz	Tape path checks and adjustment
3	PAL	5	Color bar	3 kHz	Video and Sound checks and adjustment
4	SECAM	5	Color bar	3 kHz	Video and Sound checks and adjustment
5	MESECAM	5	Color bar	3 kHz	Video and Sound checks
6	NTSC	5	Color bar	1 kHz	Video and Sound checks

### [2] ST-C3

Segment	System	Playback		Video signal	Audio signal	Applications
		Time (min.)	Mode			
1	PAL	5	LP	3 MHz Ach	400 Hz	Tape path check and adjustment
2	PAL	3	LP	Color bar	No signal	Video check and adjustment
3	PAL	3	SP	Color bar	AFM 400 Hz	Video and AFM check and adjustment
4	PAL & SECAM	5	SP	3 MHz Ach	AFM 400 Hz	AFM tracking check
5	SECAM	5	LP	3 MHz Ach	No signal	Tape path check and adjustment
6	SECAM	3	LP	Color bar	No signal	Video check and adjustment
7	SECAM	3	SP	Color bar	AFM 400 Hz	Video and AFM check and adjustment

## 2-1.Servo Circuit



### 2-1-1. Playback Phase (PG)

**Test point:** Pin 2 of P506, TP203 (Video out)

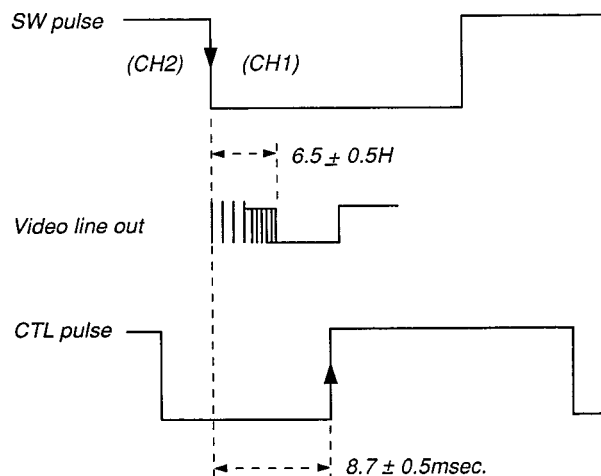
**Test equipment:** Oscilloscope

1. During playback press the unit's tracking up and down buttons simultaneously to reset the tracking to its center.
2. Under this condition confirm that phase difference between the fall of the SW pulse (pin 2 of P506) and the rise of the CTL pulse (pin 1 of P506) is  $8.7 \pm 0.5$  msec.
3. Further, observe the envelope (pin 4 of P506) waveform, and confirm that the ACE head position adjustment and linearity adjustment have been made, and C-SYNC (pin 7 of IC501) is being input during playback.
4. Set the VTR to the STOP mode.
5. Press the unit's channel up and down buttons simultaneously for at least 2 sec.
6. Afterwards, within 2 sec., simultaneously press the unit's FF and REW buttons for at least 2 sec.
7. The automatic adjustment will be made for about 10 sec., all the displays will blink and any mode shift operation is not accepted for this time period. If the automatic adjustment is not carried out, confirm that the alignment tape has a safety tab or not, and redo from the step 4.
  - 1) When adjustment has been completed:  
The display will blink for 10 sec., stop blinking and return to the normal display in the STILL mode, then it shifts to the playback display in the playback mode.

2) When adjustment fails:

It goes into the STOP mode.

8. Confirm that the play indicator is displayed, and confirm that the rising and falling of the SW pulse is  $6.5 \pm 0.5H$  from the V-sync front edge of the video signal.



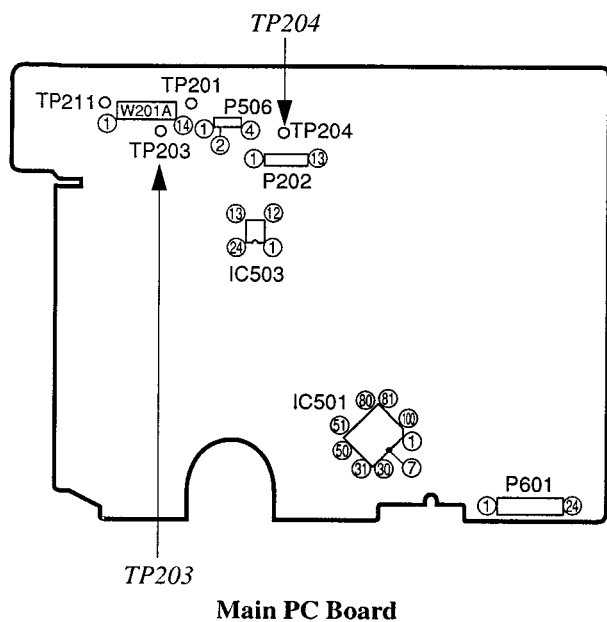
### 2-1-2. Pseudo V

**Test point:** TV monitor

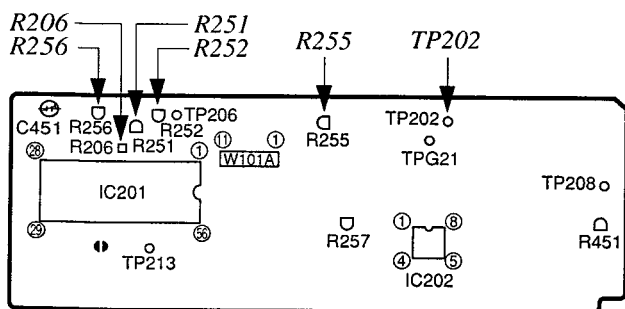
**Test equipment:** Tracking button

1. Make recordings and playback, and set to the STILL mode.
2. Adjust the main unit's tracking up and down buttons so that center of the still screen will stop.

## 2-2.Video Circuit



Main PC Board

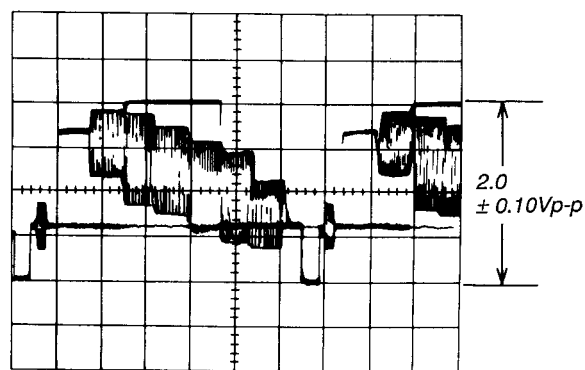


Video Control PC Board

### 2-2-1. Video AGC Level

**Test point:** TP203, TP204  
**Test equipment:** Oscilloscope  
**Adjusting point:** R255

1. Feed a color bar signal (PAL) to the line input terminals and set the VTR to the EE mode.
2. Connect the oscilloscope to TP203 and trigger the scope with HD pulse at TP204. Adjust the scope so that a waveform is displayed for 2H period.
3. Adjust R255 until amplitude of  $2.0 \pm 0.10V_{p-p}$  is obtained between sync tip and 100% white level.



### 2-2-2. Sync Tip Frequency

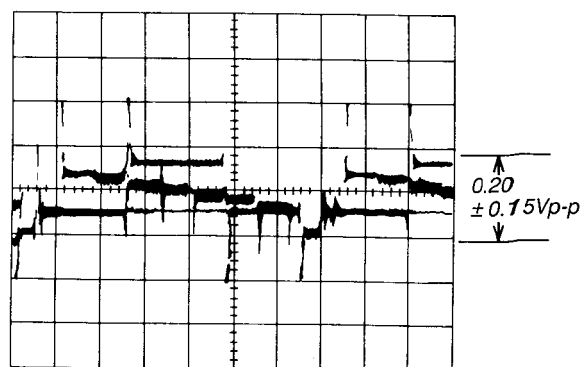
**Test point:** TP202  
**Test equipment:** Frequency counter  
**Adjusting point:** R251

1. Short circuit the line input terminals with a phone jack and set the VTR to the REC mode.
2. Connect the frequency counter to TP202.
3. Adjust R251 to obtain frequency reading of  $3.8 \pm 0.07$  MHz.

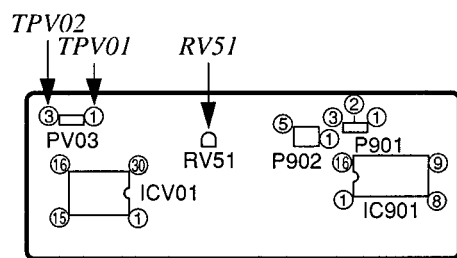
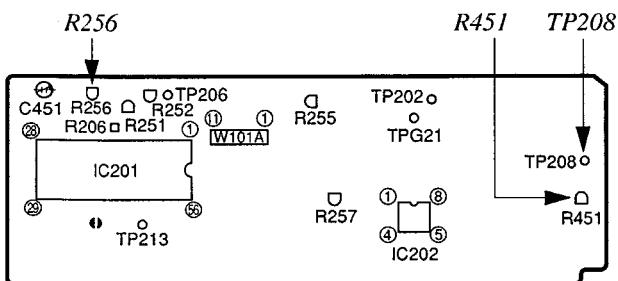
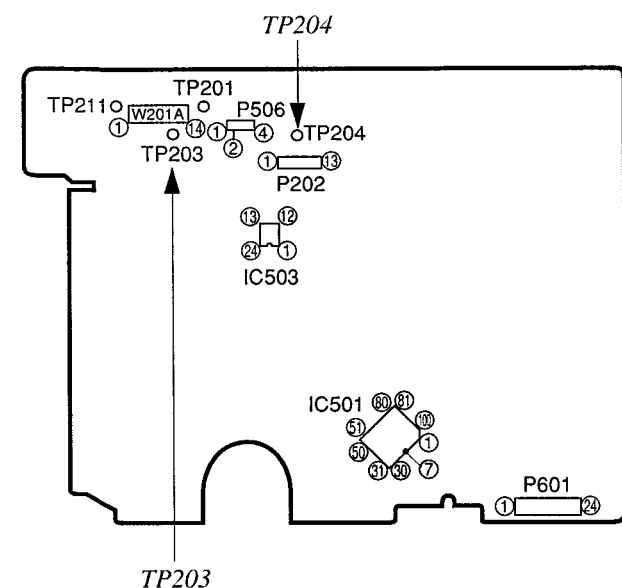
### 2-2-3. FM Deviation

**Test point:** R206 (R251 side), TP203, TP204  
**Test equipment:** Oscilloscope  
**Adjusting point:** R252, R256

1. Feed the color bar signal (PAL) to the line input terminal.
2. Connect the oscilloscope to R206 (R251 side) and trigger the scope with a HD pulse at TP204. Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R252 to obtain the amplitude of approx.  $0.20V_{p-p}$  between the sync tip and the white peak. After adjusting R256 (Playback Y signal output level) with the method 2-2-6, repeat above adjustment procedures, and then adjust R252 (FM deviation control) so that the playback Y signal output level at TP203 shows  $2.0 \pm 0.15V_{p-p}$ .



Horizontal axis:  $10\mu s/div.$   
 Vertical axis:  $0.1V/div.$



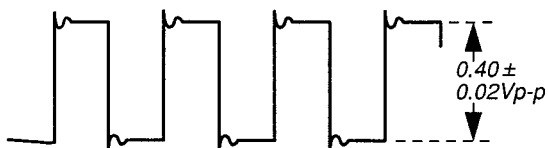
## 2-2-4. REC FM Level

**Test point:** TPV01, TPV02 GND (PV03)

**Test equipment:** Oscilloscope

**Adjusting point:** RV51

1. Connect the plug into the line input terminal and set the mode to the REC (LP) under no signal condition.
2. Connect the oscilloscope to TPV01.
3. Adjust RV51 so that FM amplitude level shows  $0.40 \pm 0.02V_{p-p}$ .



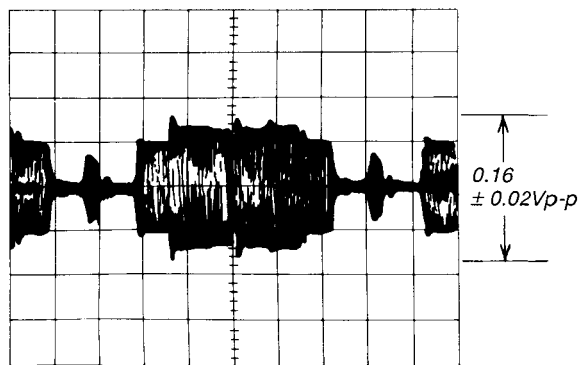
## 2-2-5. REC Color Level

**Test point:** TP204, TP208

**Test equipment:** Oscilloscope

**Adjusting point:** R451

1. Feed the PAL color bar signal to the line input terminals and set the VTR to the REC(SP) mode.
2. Connect the oscilloscope to TP208 and trigger the scope with HD pulse at TP204. Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R451 so that amplitude of the red portion shows  $0.16 \pm 0.02V_{p-p}$ .



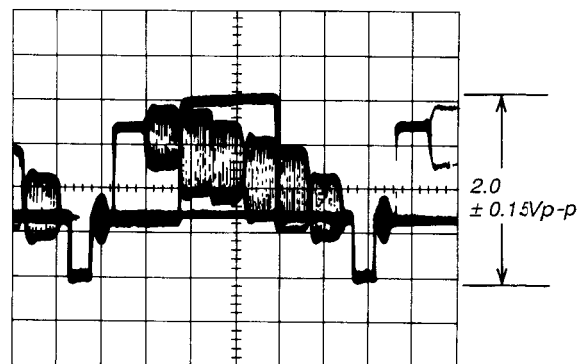
## 2-2-6. Playback Y Signal Output Level

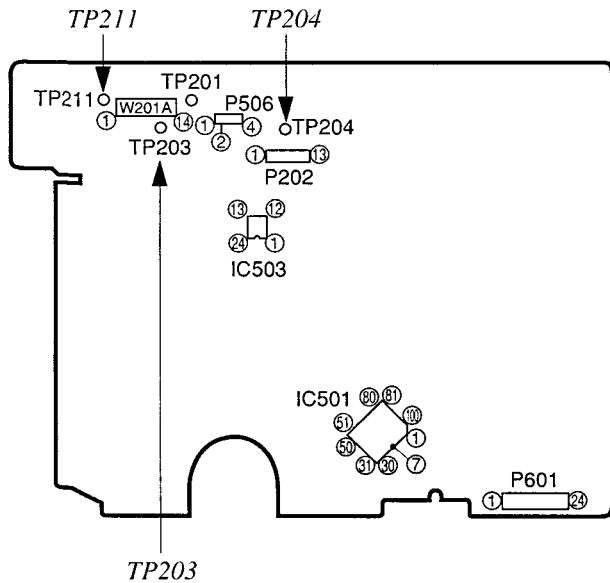
**Test point:** TP203, TP204

**Test equipment:** Oscilloscope

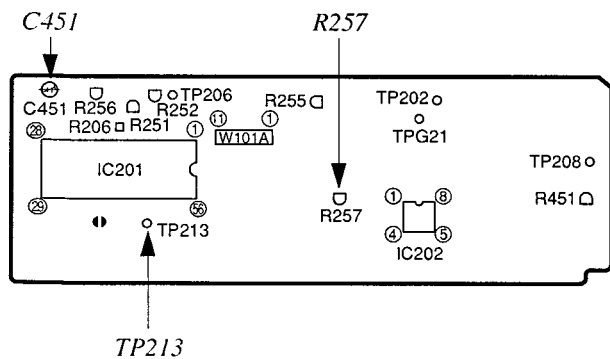
**Adjusting point:** R256

1. Play back the alignment tape, ST-C1 (PAL color bar signal).
2. Connect the oscilloscope to TP203 and trigger the scope with HD pulse at TP204. Adjust the scope so that a waveform is displayed for approx. 2H period.
3. Adjust R256 so that amplitude of  $2.0 \pm 0.15V_{p-p}$  is obtained between the sync tip and the 100% white level.

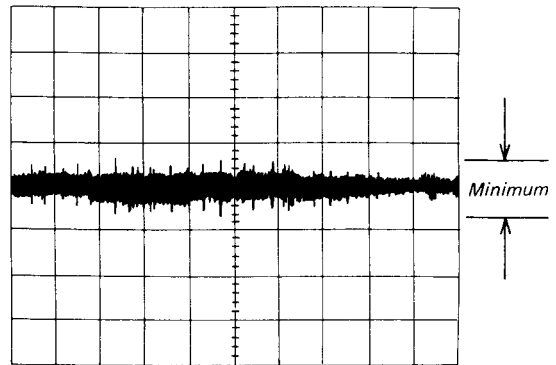




**Main PC Board**



**Video Control PC Board**



## 2-2-8. 4.43 MHz XO Frequency

**Test point:** TP211

**Test equipment:** Frequency counter

**Adjusting point:** C451

1. Play back the alignment tape, ST-C1 (PAL color bar signal).
2. Connect a frequency counter to TP211 and set the measurement range to a position which gives reading accuracy of 1 Hz.
3. Adjust C451 trimmer until the frequency reading of 4.433619 MHz  $\pm$  50 Hz is obtained.

## 2-2-7. Y Comb-filter Balance

**Test point:** TP204, TP213

**Test equipment:** Oscilloscope

**Adjusting point:** R257

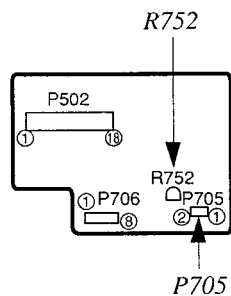
1. Play back the alignment tape, ST-C1 (PAL color bar signal).
2. Unsolder the slit beside TP213.
3. Connect the oscilloscope to TP213, and trigger the scope with HD pulse at TP204.  
Adjust the scope so that a waveform is displayed for approx. 2H period.
4. Adjust R257 so that amplitude on the scope display shows minimum. (Ignore glitches.)
5. Solder the slit.

## 2-3.Audio Circuit

### Note:

Unless otherwise specified, set as follows:

- Input select  
(set the INPUT SELECT "L1") ..... LINE 1
- Audio select switch ..... Conventional  
(Both L, R indicators should be turned off.)
- External terminal ..... Audio terminal (AV 21 pin)  
(Lch and Rch)
- Connect 10 k ohm load to audio output terminal.  
(AV 21 pin)
- Adjustments for the playback frequency response and playback output level may not be performed if the audio control head is improperly positioned on the audio track. In such a case, perform the azimuth adjustment and height adjustment perfectly, and then proceed with the adjustments 2-3-1 to 2-3-3.



Relay PC Board

### 2-3-1. Playback Output Level (Confirmation)

**Test point:** Audio line output terminal (AV 21 pin)

**Test equipment:** Millivoltmeter

1. Connect 10 k ohm to the audio line output terminal and playback the alignment tape (ST-C1).
2. Confirm that the output level is  $-5 \pm 2$  dBs.

### 2-3-2. Bias Current

**Test point:** Pins 1 and 2 of P705

**Test equipment:** Millivoltmeter

**Adjusting point:** R752

1. Short circuit the audio line input terminal, creating no input signal condition. Connect a millivoltmeter to pins 1 and 2 (GND) of P705.
2. Set the VTR to the record mode and adjust R752 to obtain 2.9mVrms.

### Note:

If the adjusted value is too high, treble tone tends to decrease. If the value is too low, distortion tends to increase.

### 2-3-3. Record/Playback Output Level

**Test point:** Audio line output terminal  
(AV 21 pin)

**Test equipment:** Millivoltmeter

1. Connect a 10 k ohm resistor to the audio line output.
2. Feed 400 Hz,  $-5.0$  dBs signal to the audio line input terminal and record the signal.
3. Confirm to see the playback output level is  $-5 \pm 3$  dBs.

### Note:

When recording audio signals, record a video signal no signal at the same time.

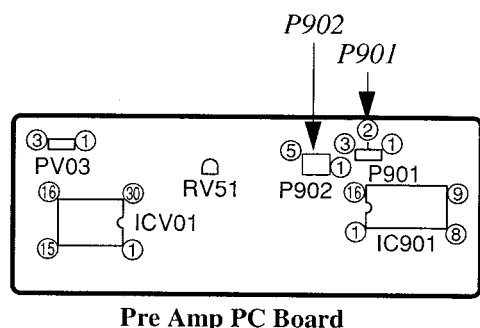
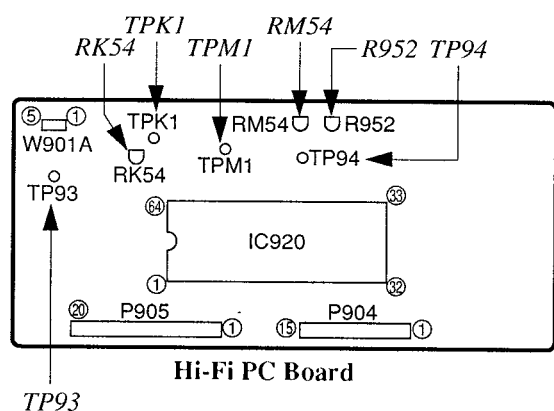
4. If the level is less than  $-5 \pm 3$  dBs, short-circuit a slit in the Hi-Fi Audio PC Board.

## 2-4. Hi-Fi Audio Circuit

### Note:

Unless otherwise specified, set as follows:

- Input select  
(set the INPUT SELECT "L1") ..... LINE 1
- Audio select switch..... Stereo  
(Both L, R indicators should be turned on.)
- External terminal  
..... Audio terminal (AV 21 pin)  
(Lch and Rch)
- Connect 10 k ohm load to audio output terminal.  
(AV 21 pin)



### 2-4-1. Carrier Frequency

**Test point:** TPK1, TPM1

**Test equipment:** Frequency counter  
(Input impedance; more than 1 MΩ.)

**Adjusting point:** RK54, RM54

1. Disconnect FFC W901 of P902 on Pre Amp PC board.
2. Connect TP93 and TP94.
3. Connect frequency counter to TPK1 and TPM1. The amplitudes at these test points are low, so they should be amplified by amplifiers in oscilloscope, etc. and then input amplified outputs to the frequency counter.
4. Adjust RM54 for  $1400 \pm 3.5$  kHz at TPM1 and RK54 for  $1800 \pm 3.5$  kHz at TPK1.
5. After adjustment is completed, remove the connections between TP93 and TP94.
6. Connect W901 to P902 on Pre Amp PC Board.

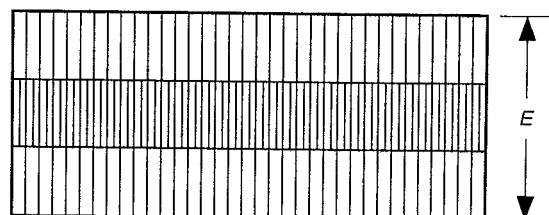
### 2-4-2. Record Level

**Test point:** Pin 2 of P901 (Pre Amp PC Board)

**Test equipment:** Oscilloscope

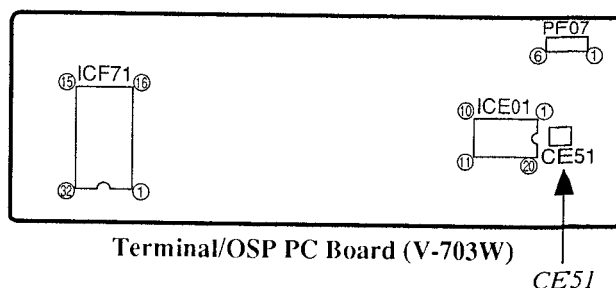
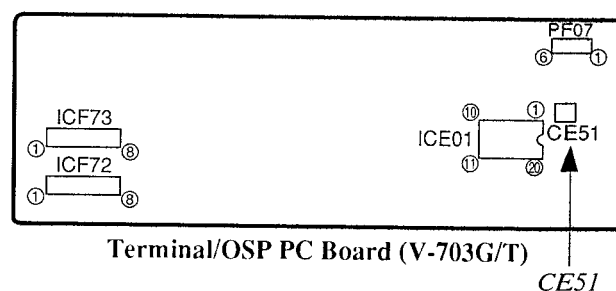
**Adjusting point:** R952

1. Adjust R952 to obtain record FM waveform of E.  
( $E = 0.4 \pm 0.02$  Vp-p.)
2. The adjustment should be performed 15 sec. after starting of the record.



Record FM waveform

## 2-5. OSP Circuit



### 2-5-1. Character Position Adjustment

**Test point:** \_\_\_\_\_

**Test equipment:** TV monitor

**Adjusting point:** CE51

1. Feed color bar signal to the line input terminal
2. Set the VTR to the OSP mode.
3. Adjust CE51 so that character position is in the middle of the display.

# SECTION 3

## SERVICING DIAGRAMS

### 1. Inspection Procedure

Operation steps		Items to be confirmed	Inspection block	Page	
				Block Diagram	Circuit Diagram
1. AC plug-in	Time setting Program timer setting	Clock display Time setting operation	Power (AC system) Timer display	3-12	3-45
				3-18	3-53
2. Power SW ON	Power ON Counter Channel selection,  AFC operation EE picture & tone quality	Mode display lamp TV receive condition, Channel select operation, AFC operation level, EE picture quality, Tone signal level	Power Logic RF reception Video (EE, REC mode) Audio (EE, REC mode)	3-12	3-45
				3-26	3-56
				3-13,16	3-48,51
				3-33	3-60
3. Cassette-in and Cassette-out	Cassette-in Cassette loading Eject Cassette-out	F/L mecha. operation Cassette loading operation Eject operation Indicator lamp Abnormal sound	Logic	3-39	3-68
				3-26	3-56
4. Key entry operation	REC, PLAY Cue/Review Still, Frame feeding/slow FF/REW	Indicator lamp Each mode operation (Tape drive operation) Abnormal sound	Logic Remote control	3-26	3-56
					3-74
5. Special Functions Fully Automatic Play  Tracking	Cassette-in at Power OFF (Without safety tab) Digital tracking	Power ON, Cassette down Automatic Play Automatic adjustment for the tracking	Power Logic Logic/Servo	3-12	3-45
				3-26	3-56
				3-26	3-56
6. Playback Function Tone Quality Others	PLAY (Test tape) Cue/Review Still/Slow	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter, Picture sewing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-33	3-60
				3-39	3-68
				3-26	3-56
7. REC/PLAY Functions Tone Quality Others	REC/PLAY	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter, Picture sewing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-33	3-60
				3-39	3-68
				3-26	3-56

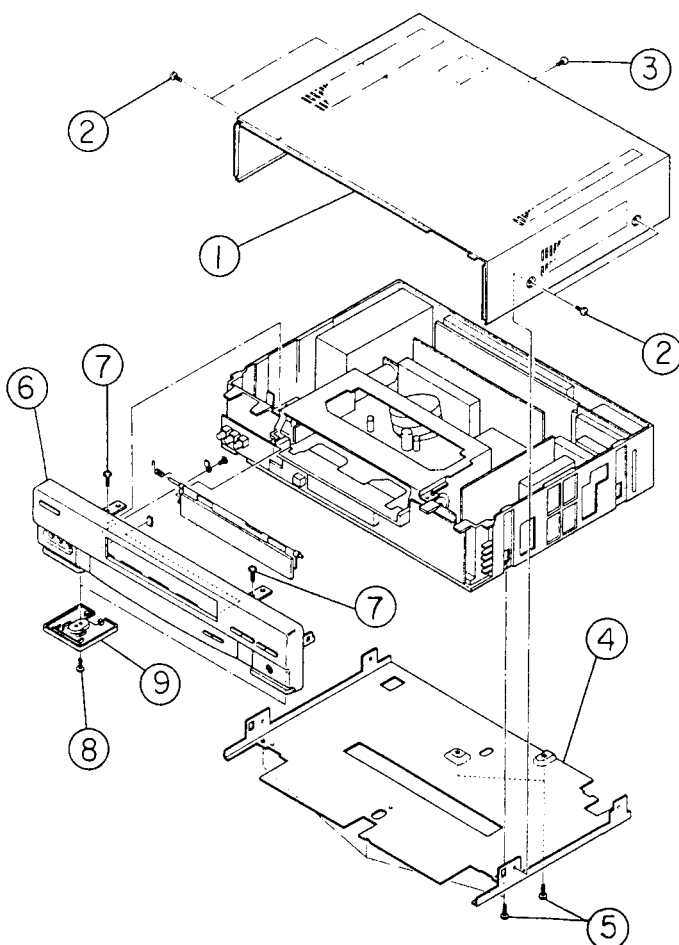
#### How to use the table

1. When inspecting a defective VTR, proceed according to the steps shown in the table.
2. Check the items to be confirmed for each operation step.
3. If a problem is found on the item, check waveforms (level) referring to the block diagram relating to the items.
4. Use PC board pattern diagram and schematic diagram to examine the circuit precisely.
5. After completion of the repair work, check steps 1 – 7 again.

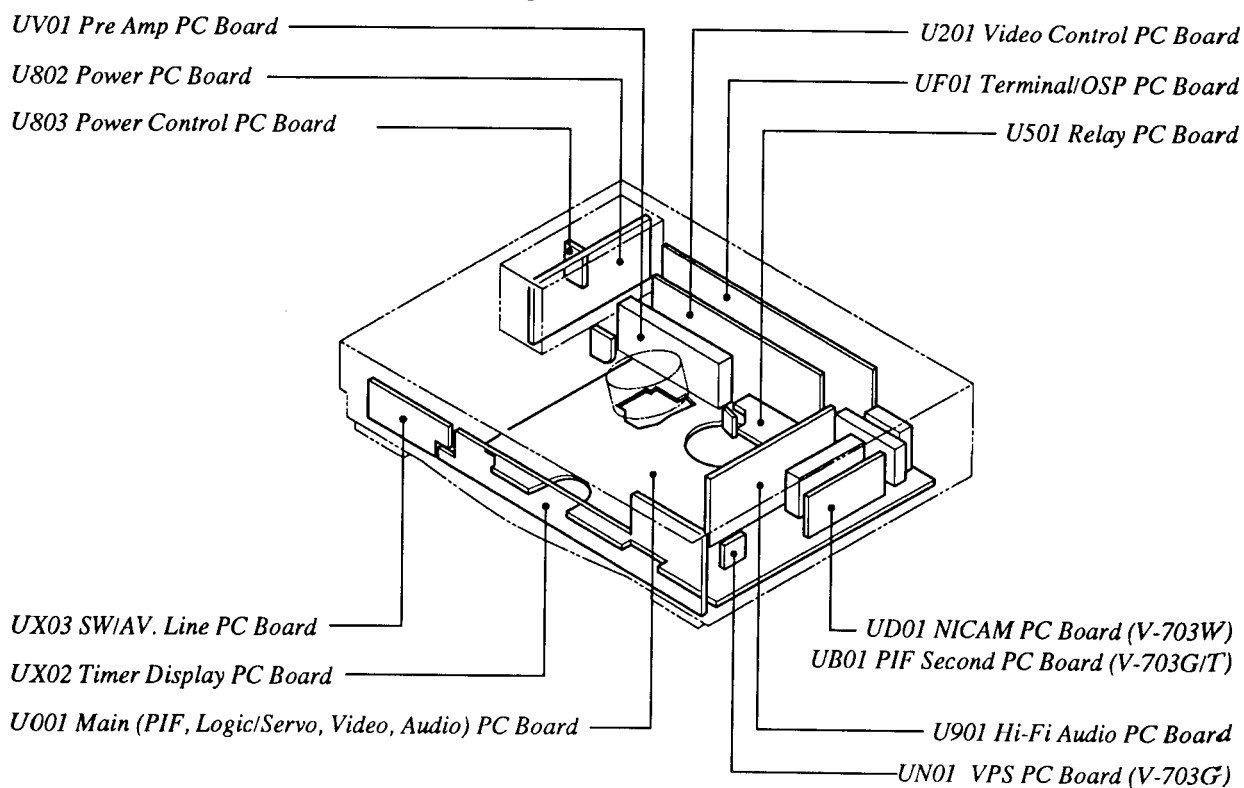


## 2. Removal of Cabinet

1. Disconnect the power cord plug from the AC outlet.
2. Remove four screws ② and a screw ③ securing the top cover ①.
3. Slide the top cover ① backward to remove.
4. Remove two screws ⑧ securing the insulators ⑨.
5. Remove five screws ⑤ securing the bottom cover ④, and then remove the bottom cover ④.
6. Remove the two screws ⑦ securing the front panel ⑥.
7. Remove the front panel ⑥.

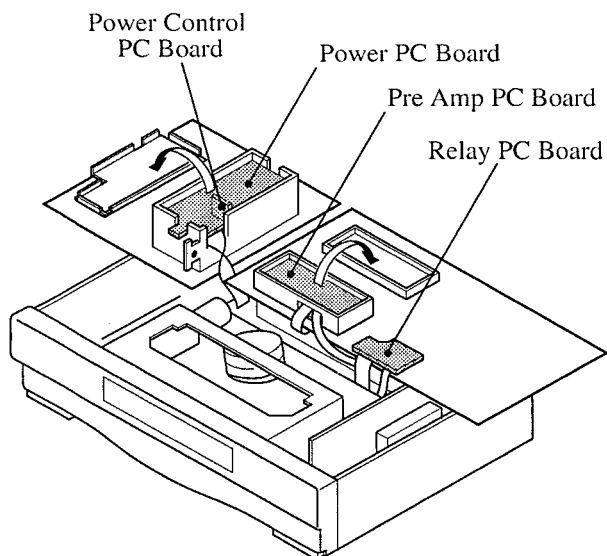


## 3. Electrical Units Location Diagram

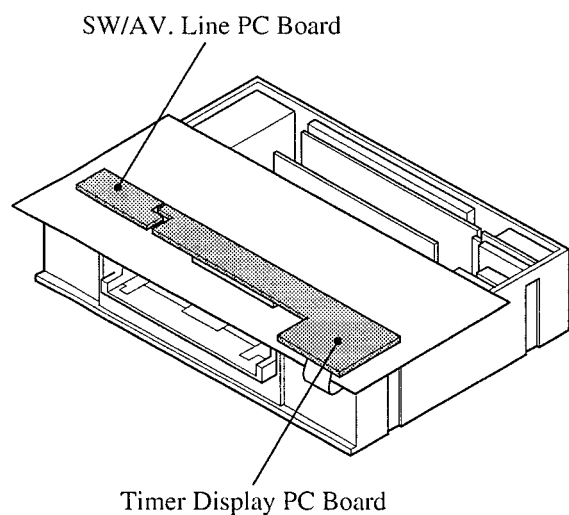


## 4. Standing PC Boards for Servicing

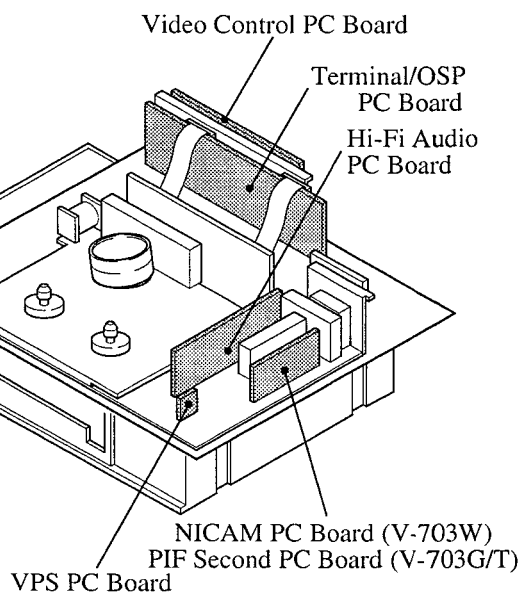
### Power, Power Control, Pre Amp, Relay PC Board



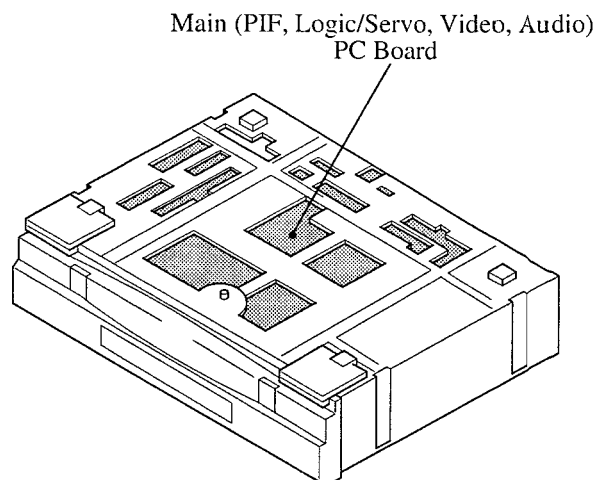
### Timer Display, SW/AV. Line PC Board



### Video Control, Terminal/OSP, NICAM (V-703W), PIF Second (V-703G/T), Hi-Fi Audio, VPS (V-703G) PC Board

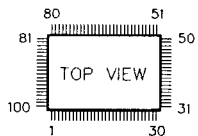
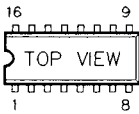
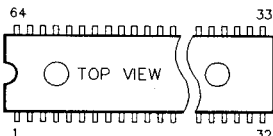
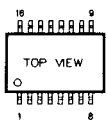
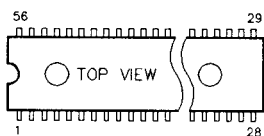
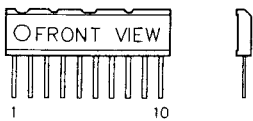
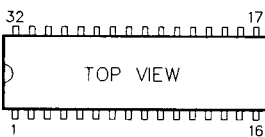
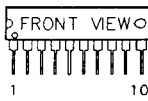
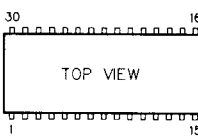
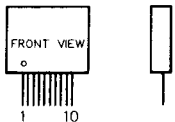
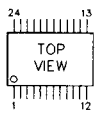
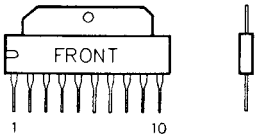
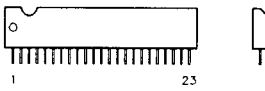
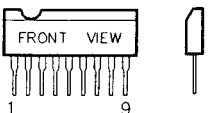
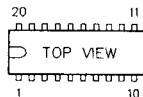
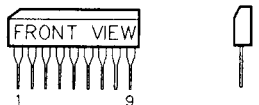
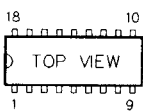
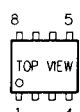


### Main (PIF, Logic/Servo, Video, Audio) PC Board



## 5. Part Configuration and their Symbols

### 1. ICs

NAME	SHAPE	NAME	SHAPE
TMP90CH42E-3601Z		TA7772P	
TB1204N TA8813AN		TA2009F	
TA8886N		BA7645N	
BA7730S		LA7210	
TA8676F		STK5383	
TA8789AF		TA7291P	
BA77951S		BA7021	
M35011-054SP		TA75557S	
SAA4700 TDA6620-2		TC89101P(Z)	

NAME	SHAPE
TL8839P	
BA7611AN	
M5201L	
LQT60X1	
STRD6202	
PQ12RF1	
TLP721	
UPC1093J	
PST572C PST572D	

NAME	SHAPE
AN7809F	
2. TRANSISTORS	
2SC1959-Y	
PT493F	
2SC2236-Y(C) 2SC2655-Y 2SA1020-Y 2SA966-Y(C)	
2SC3422-Y	
2SA1297GR	
2SC3852	
RN2406, 2SC3125 2SC2712-Y, 2SC3326-A RN1404, RN2402 RN1403, RN2401 RN2404, RN1402 2SC2714-Y, 2SA1162-Y	

NAME	SHAPE
XN6501	
3. DIODES	
RK46 AG01	
1SS176	
ERA15-02	
RU1P	
ERA15-06	
1SS226 HSM123 1SS184 1SS181	
1SS187	

NAME	SHAPE
MA111	
GL451V	
TLG133A FA	
S1WBA60	
RD4.3MB1 02CZ5.1-Y	
04AZ33Y 04AZ9.1Z	

PRECAUTIONS FOR PART REPLACEMENT

- In the schematic diagram, parts marked  $\triangle$  (ex.  $\triangle$  F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire, etc.

SOLID RESISTOR INDICATION

Resistor	1/6W film	P type film	U type film	Solid	Oxide film	Metal film	Cement	Fuse
Symbol	None	P	U	S	R	W	W	RF

Tolerance	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$
Symbol	G	J	None	None

- All film type and oxide film resistors are  $\pm 5\%$ , so the tolerance symbol was not indicated for them.

CAPACITANCE INDICATION

Description	Symbol	Capacitance, unit	Capacitance allowance
Electrolytic	$\begin{array}{c} \pm \\ \text{---}   \text{---} \end{array}$	$\mu\text{F}$	Not indicated
Special electrolytic			Indicated
Plastic film	$\text{---}   \text{---}$	$\mu\text{F}$ :indicated with numbers below decimal point	Indicated below $\pm 5\%$ (J), indicated below $\pm 0.5\text{pF}$ , not indicated for others
Ceramic		$\text{pF}$ :indicated with numbers over decimal point	
Trimmer	$\text{---} \diagup \text{---}$	$\text{pF}$	Not indicated

**Note:** No working voltage is indicated for capacitors rated at 50V except electrolytic capacitors.

WAVEFORM AND VOLTAGE MEASUREMENT

- Measurement of waveform and voltage at each section in the color circuits was conducted with sufficient service color bar signal being received and reproduced in normal conditions.
- Waveforms and voltage values for the remaining circuit were measured with a broadcasting signal normally received, so they may vary slightly according to the programs being received. Use them as a measure for servicing.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

CHIP PART REPLACEMENT

(Use spare part with wire leads connected.)

1. Hold a Chip part to be removed with tweezers and apply heat to the solder at one end of the part with a soldering iron. (Fig. 1)
2. Apply heat to the solder at the other end of the part and remove it.  
The heating time should be as short as possible so the excessive heat is not applied to foil patterns and the PC Board.
3. If it is difficult to remove the part, temporarily stop the desoldering job and wait until temperature of the part lowers.  
Then, repeat steps 1 and 2.
4. Form leads of the replacement part (general part equivalent to the chip part) as shown in the figures and solder place. (Fig. 2)
5. Mount the replacement part so that it does not touch any other parts. (Fig. 3)

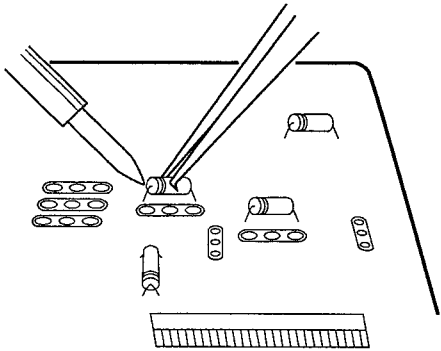


Fig. 1

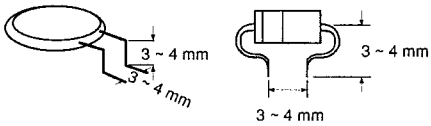


Fig. 2

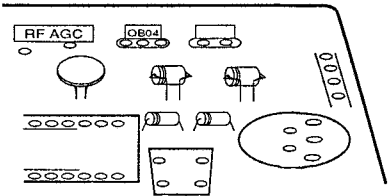


Fig. 3

## REPLACING SUBMINIATURE "CHIP" PARTS

### 1) Required tools:

1. Fine tipped, well insulated soldering "pencil," about 300 Watts.
2. Tweezers
3. Blower type hair dryer.

### 2) Soldering cautions:

1. Do not apply heat for more than 3 seconds.
2. Avoid using a rubbing stroke when soldering.
3. Discard removed chips; do no reuse them.
4. Supplementary cementing is not required.
5. Use care not to scratch or otherwise damage the chips.

### 3) Removal (resistors, capacitors, etc.):

1. Melt the solder at one side.

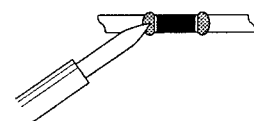


Fig. 1

2. Grasp the part with tweezers and melt the solder at the other side.

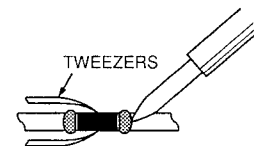


Fig. 2

3. Remove the part with a twisting motion.

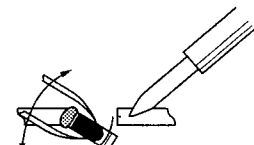


Fig. 3

### 4) Removal (transistors, diodes, etc.):

1. Melt the solder of one lead.

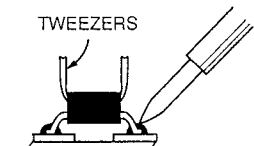


Fig. 4

2. Lift the side of that lead upward.

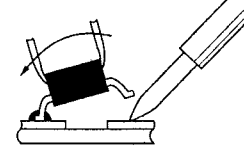


Fig. 5

3. Simultaneously heat solder the two remaining leads and lift part to remove.

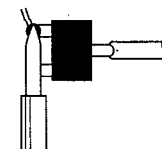


Fig. 6

### 5) Preheating (except for semiconductors):

Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

### 6) Replacement:

1. Presolder the contact points of the circuit pattern.

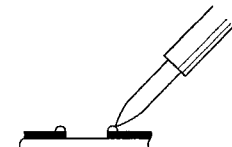


Fig. 7

2. Press the part downward with tweezers and apply the soldering pencil as indicated in the figure.

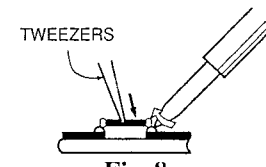
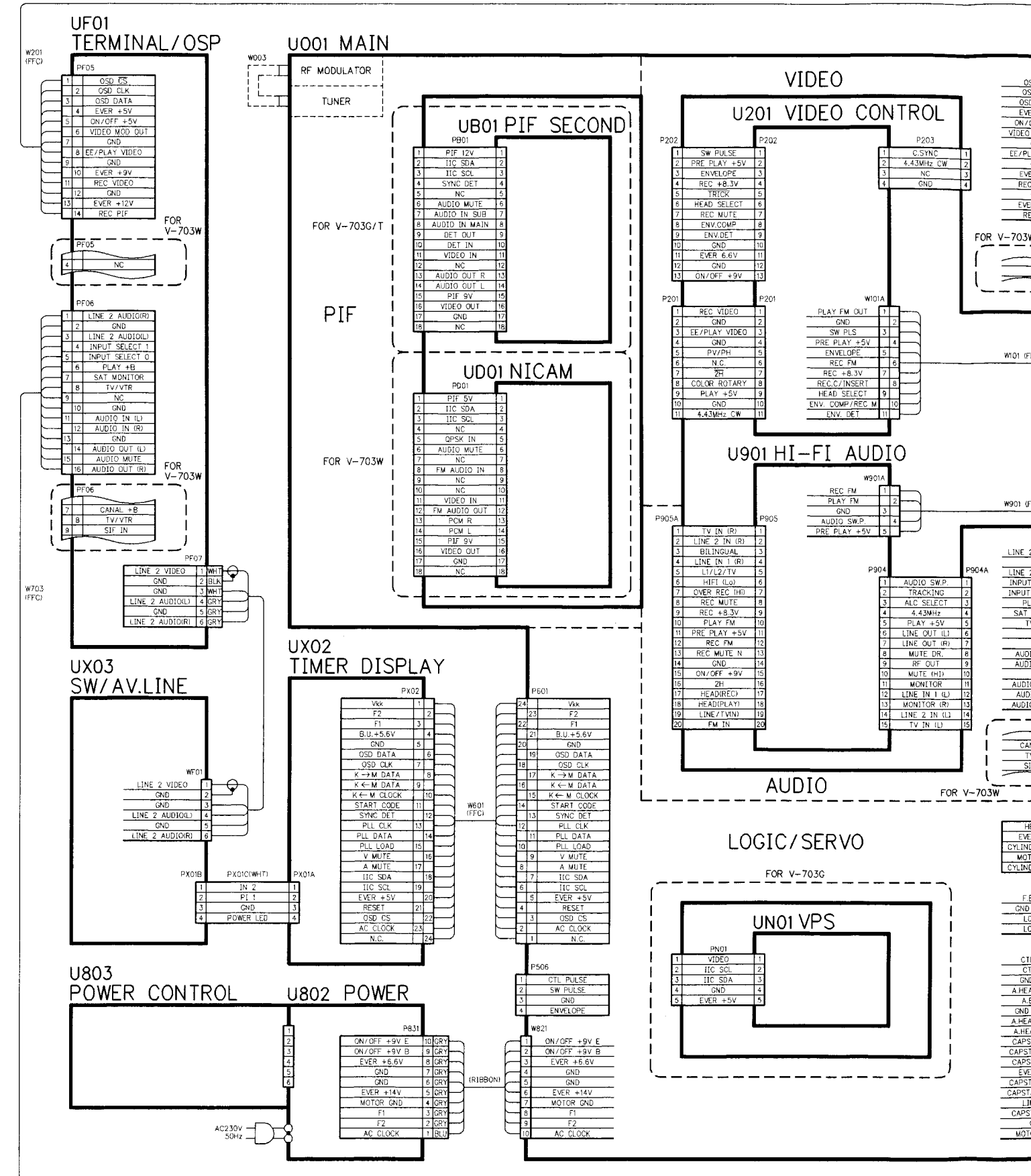
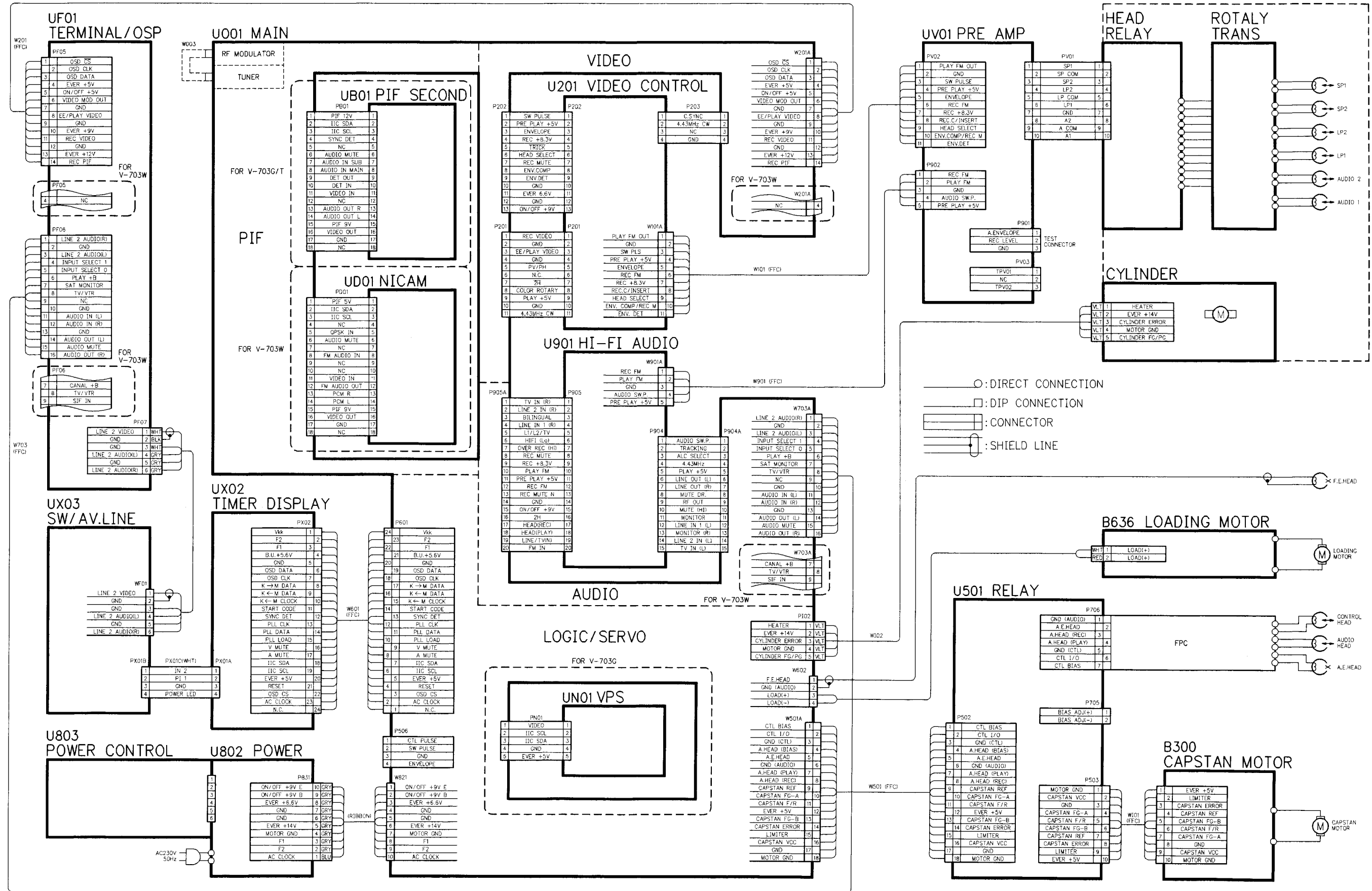


Fig. 8

## 6. Printed Wiring Board and Schematic Diagram

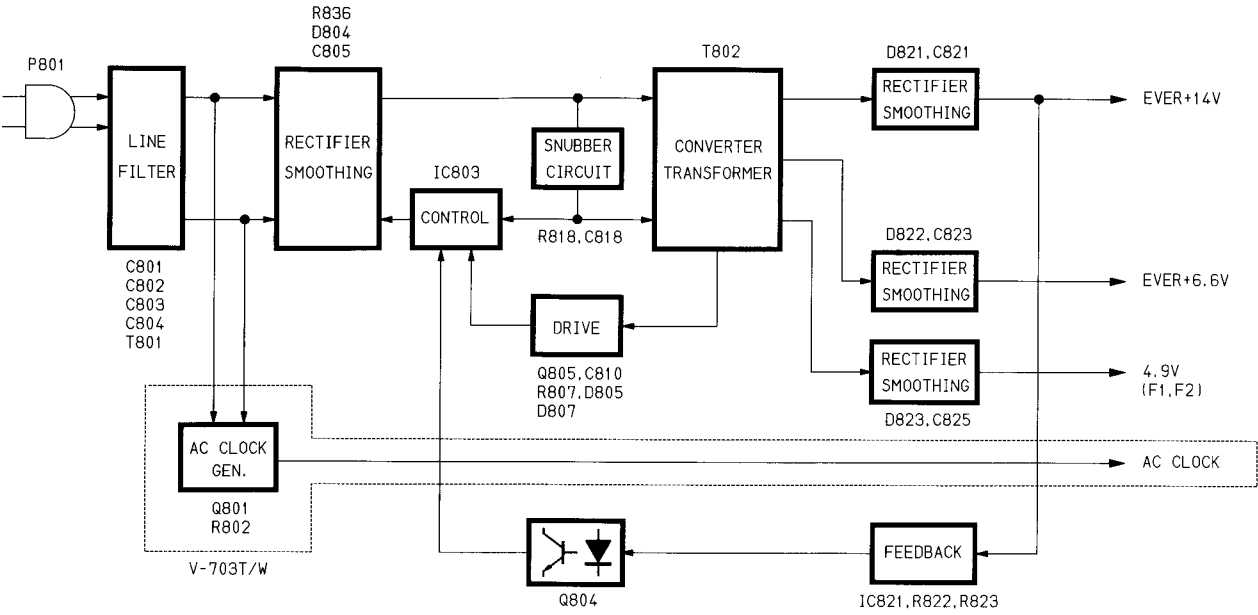


## 6. Printed Wiring Board and Schematic Diagram

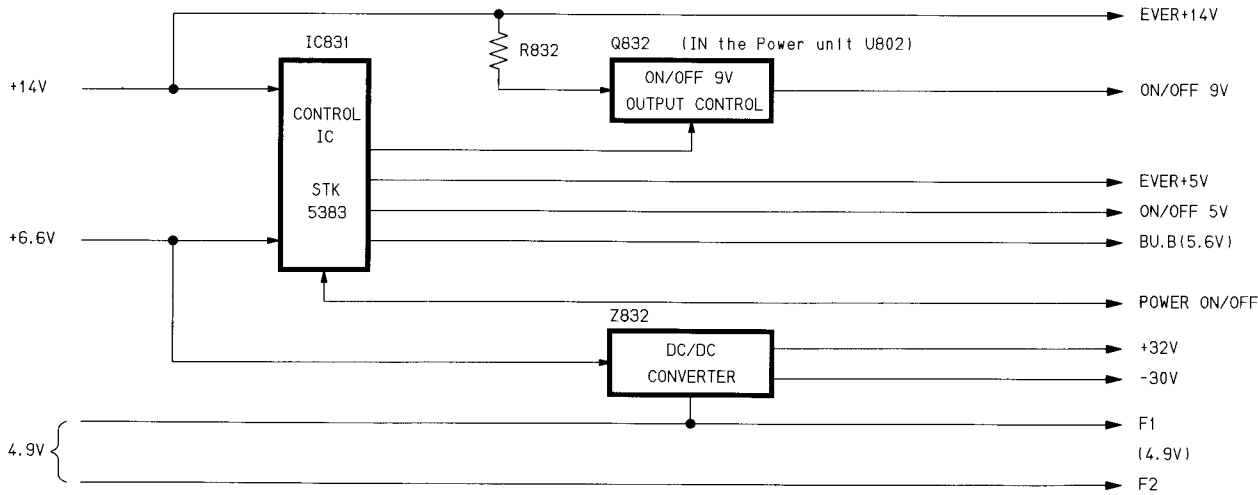


7. Block Diagrams

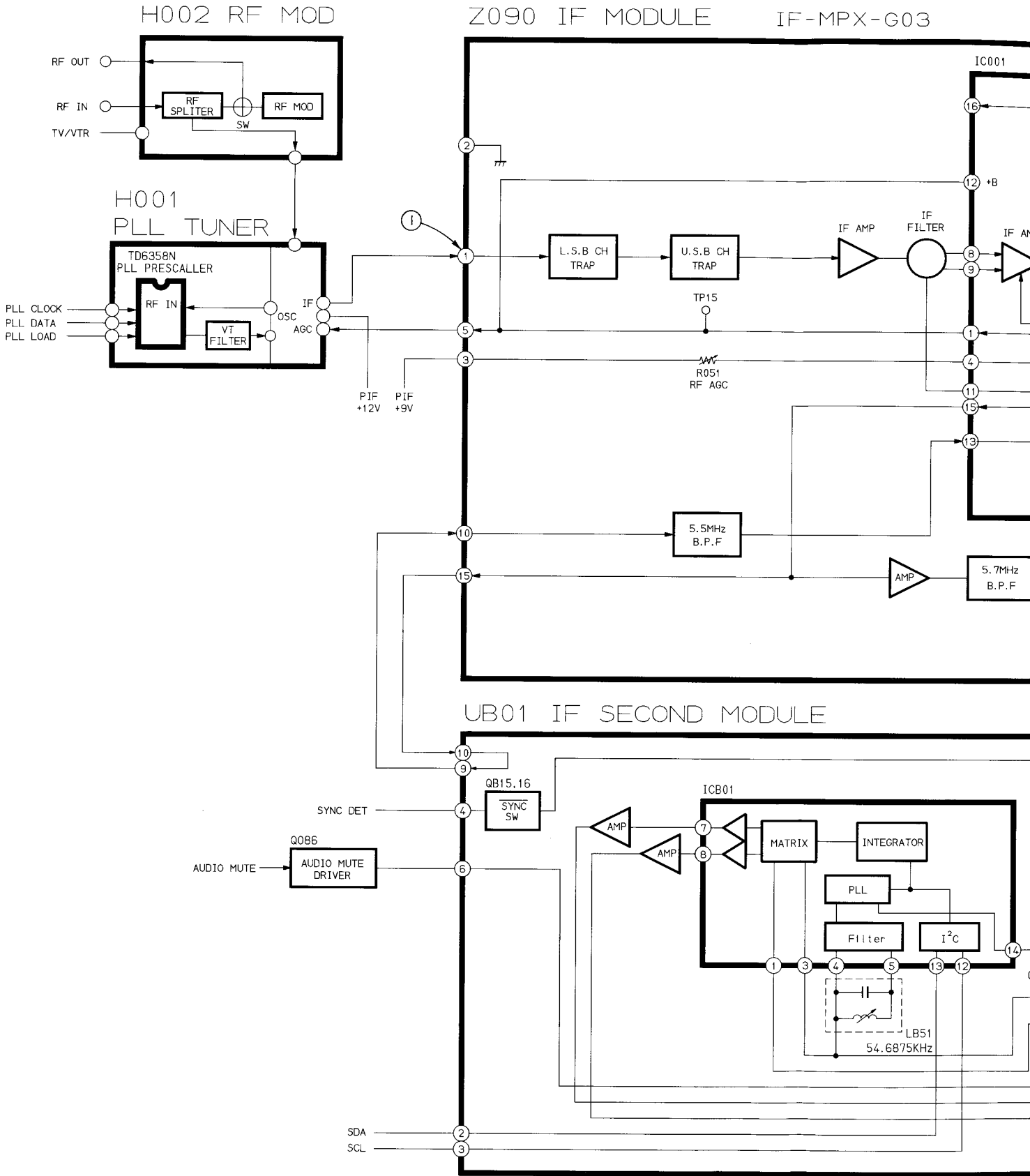
7-1. Power Block Diagram



(Main board)

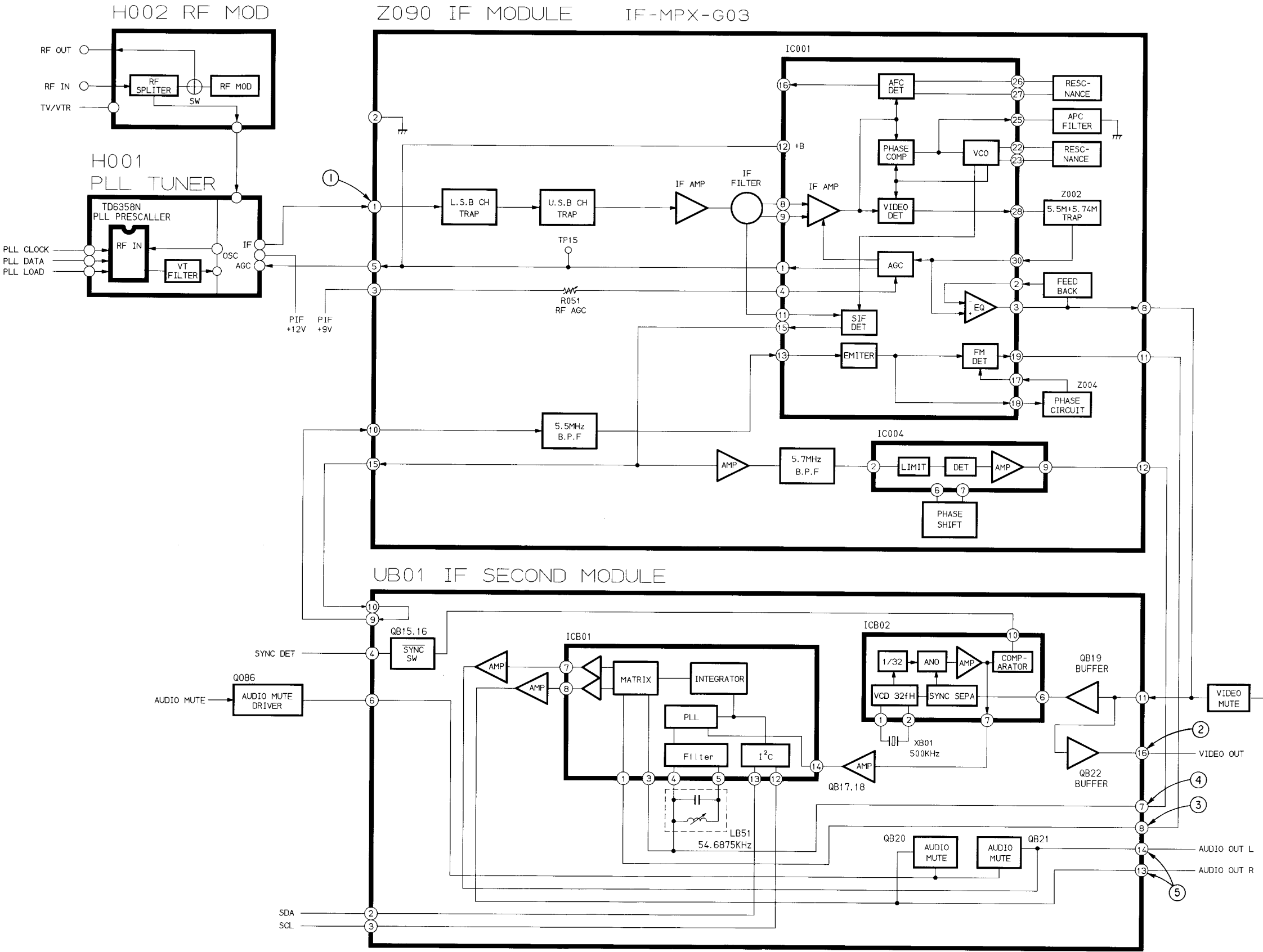


7-2. PIF Block Diagram (V-703G/T)

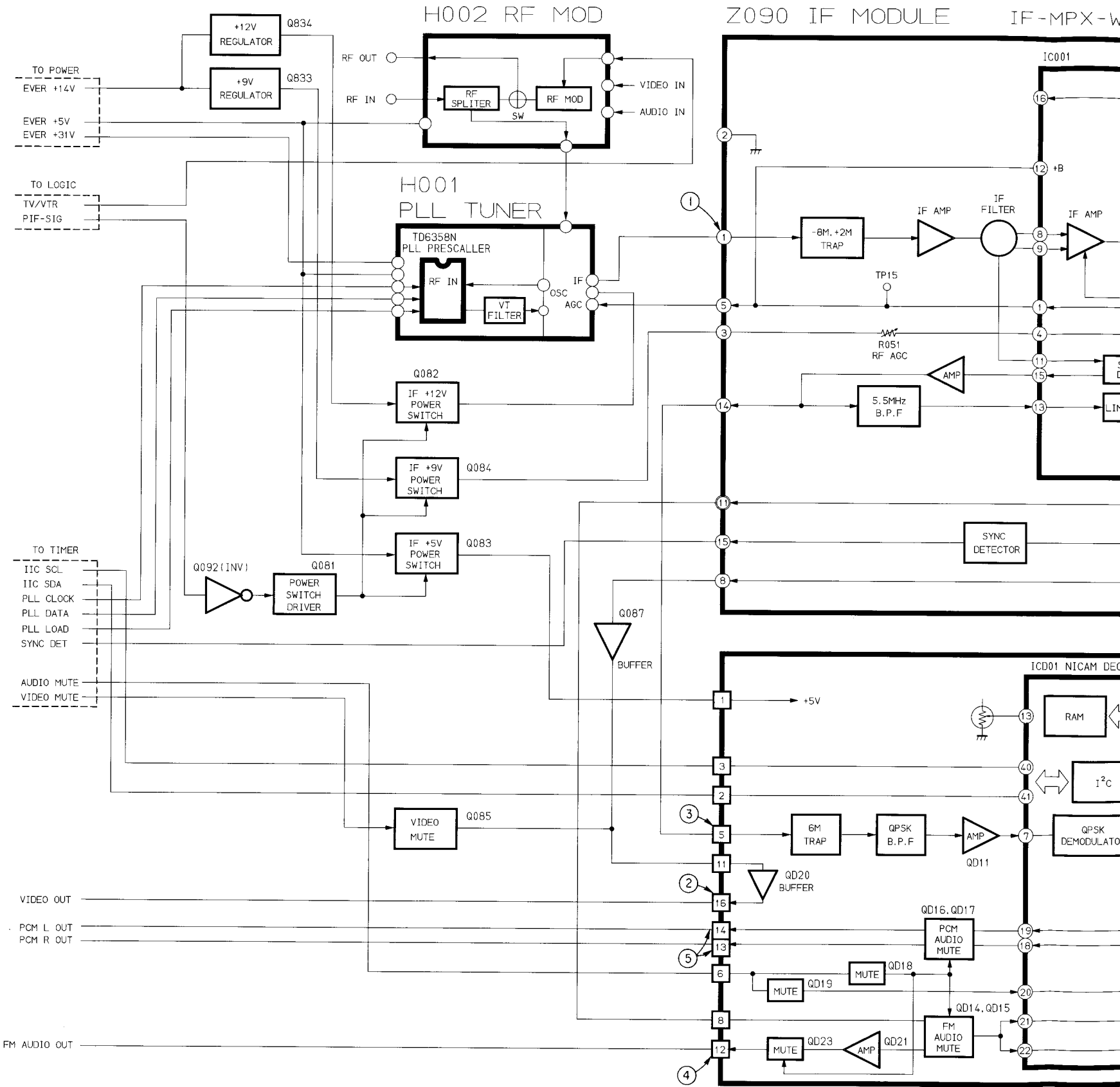
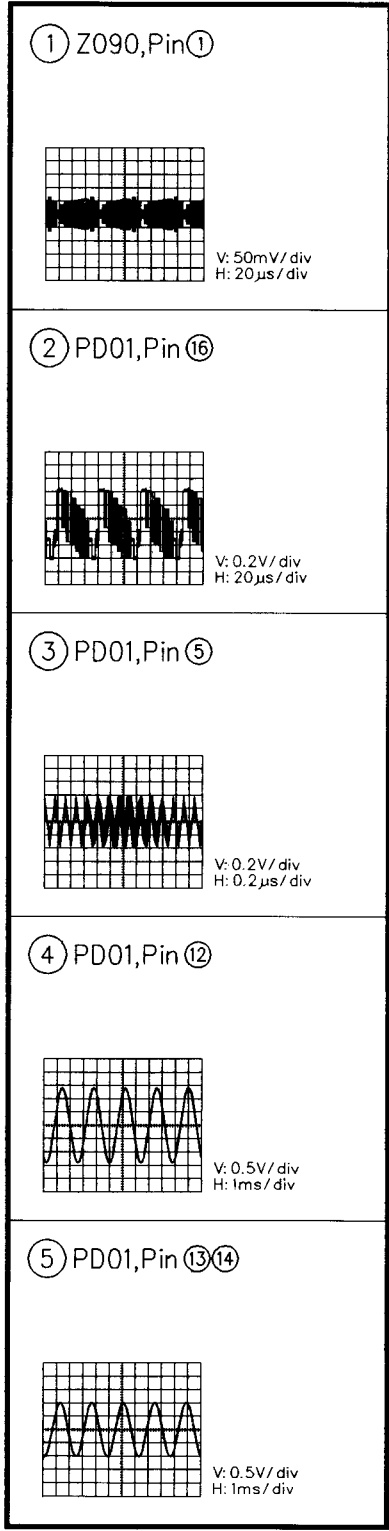
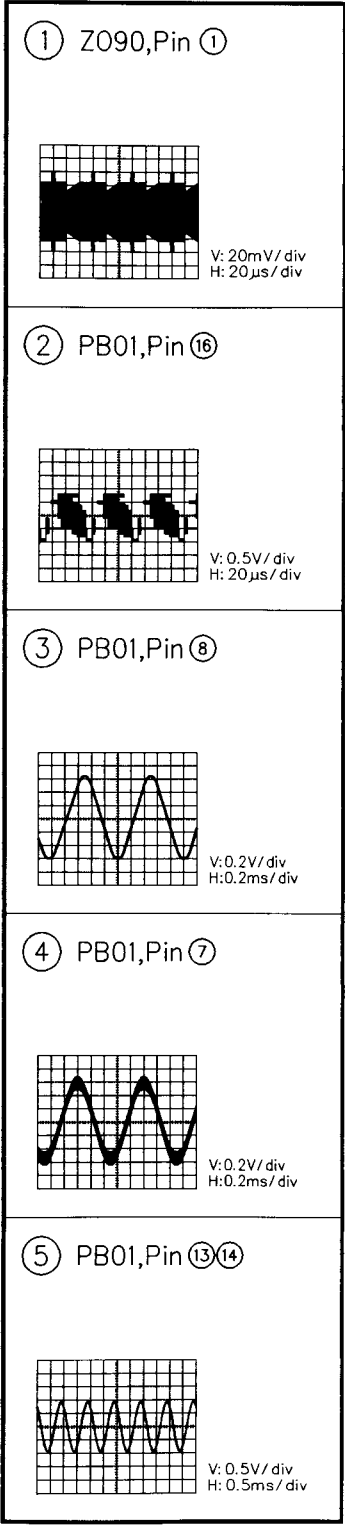




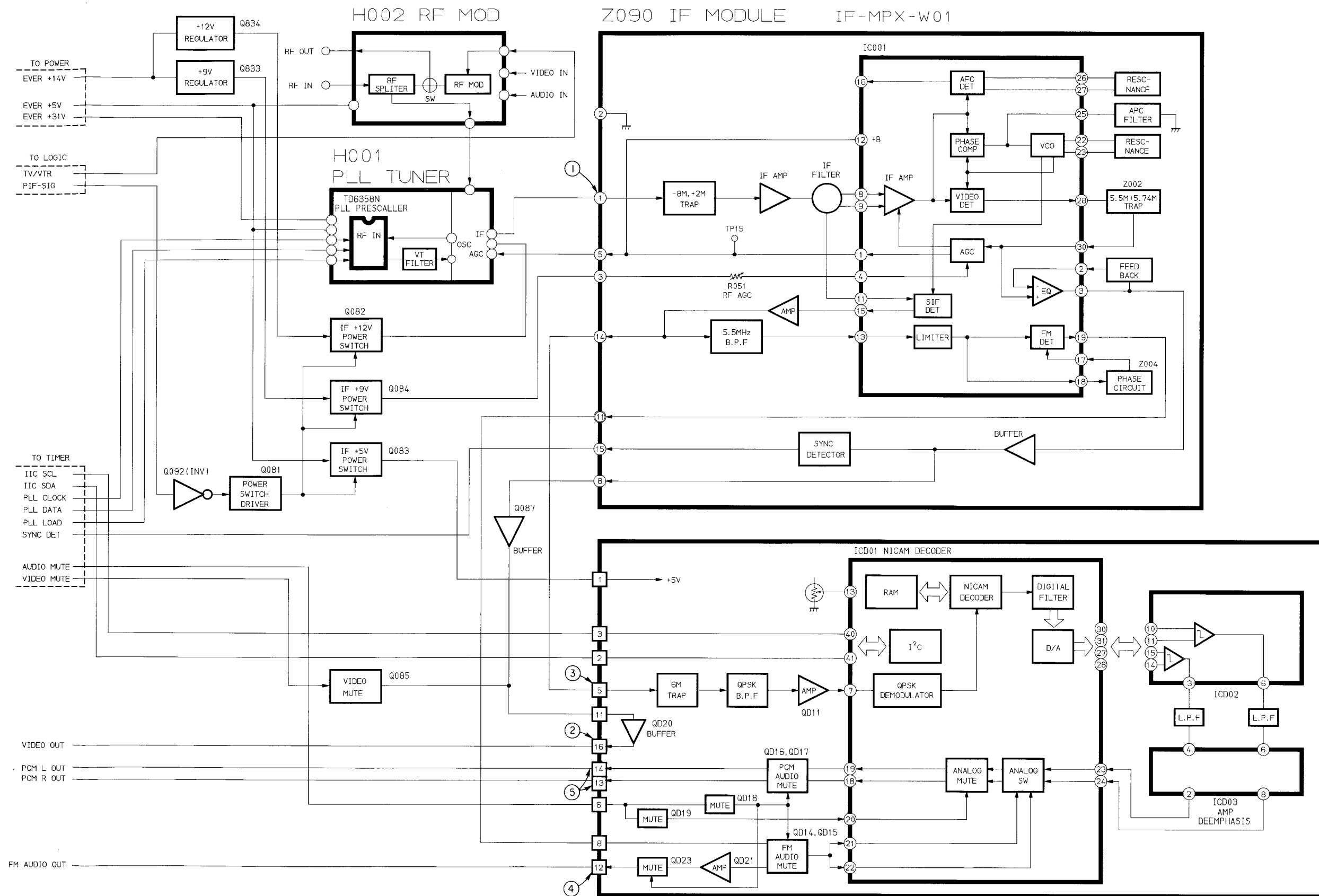
7-2. PIF Block Diagram (V-703G/T)



PIF Block Diagram (V-703W)

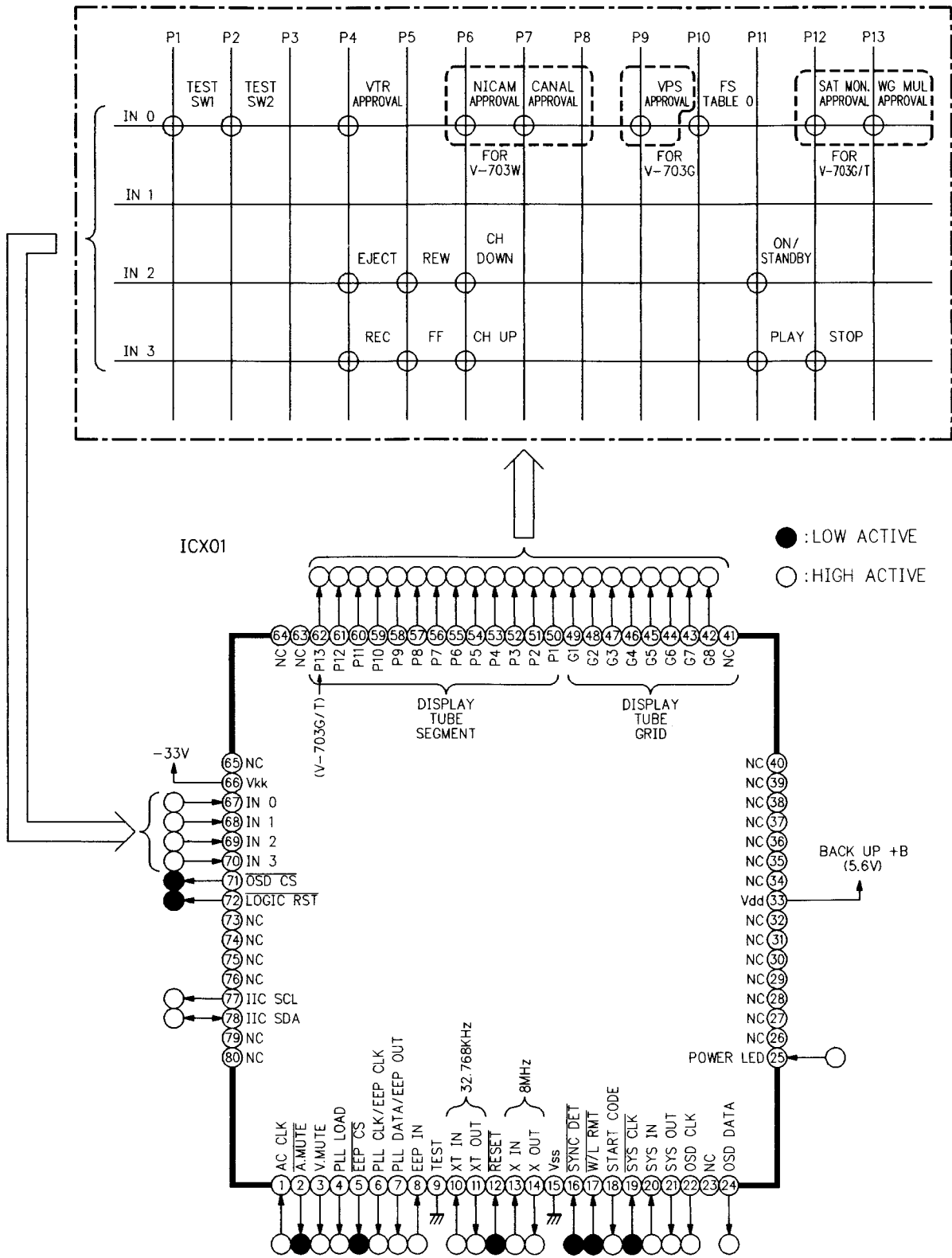


703W)

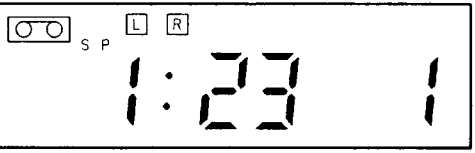
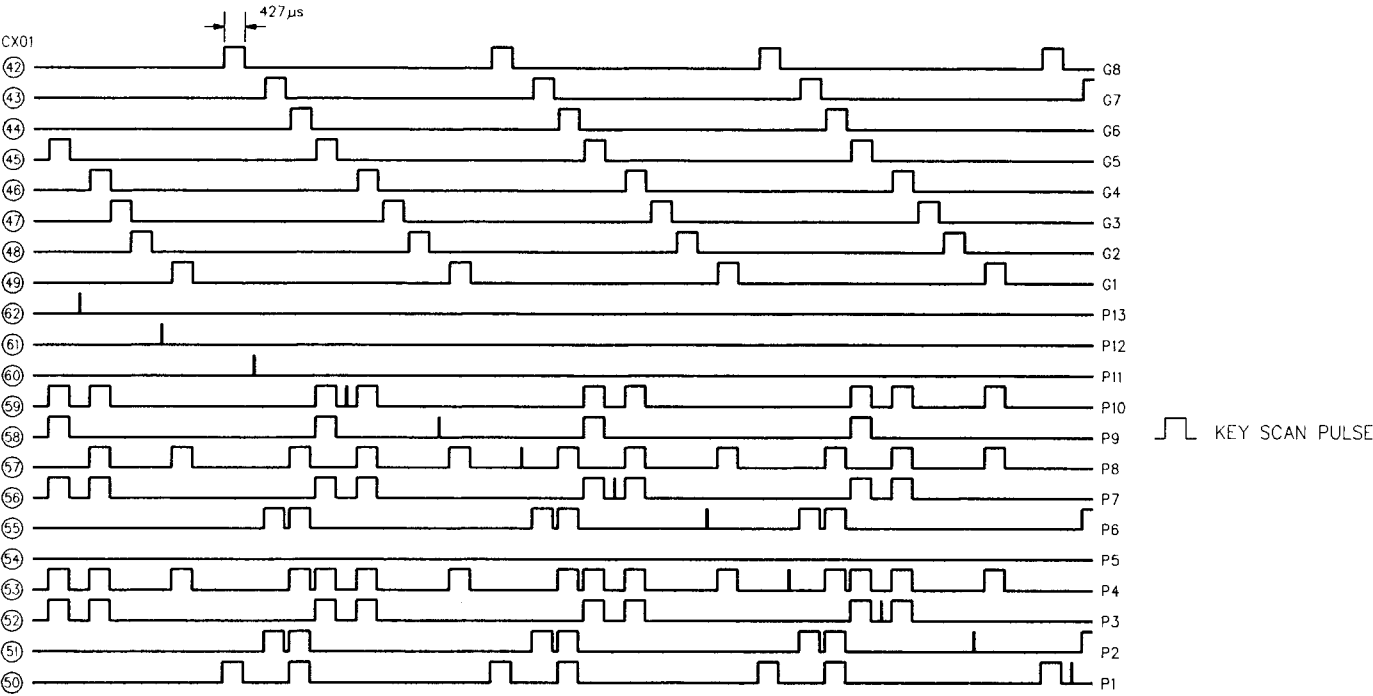
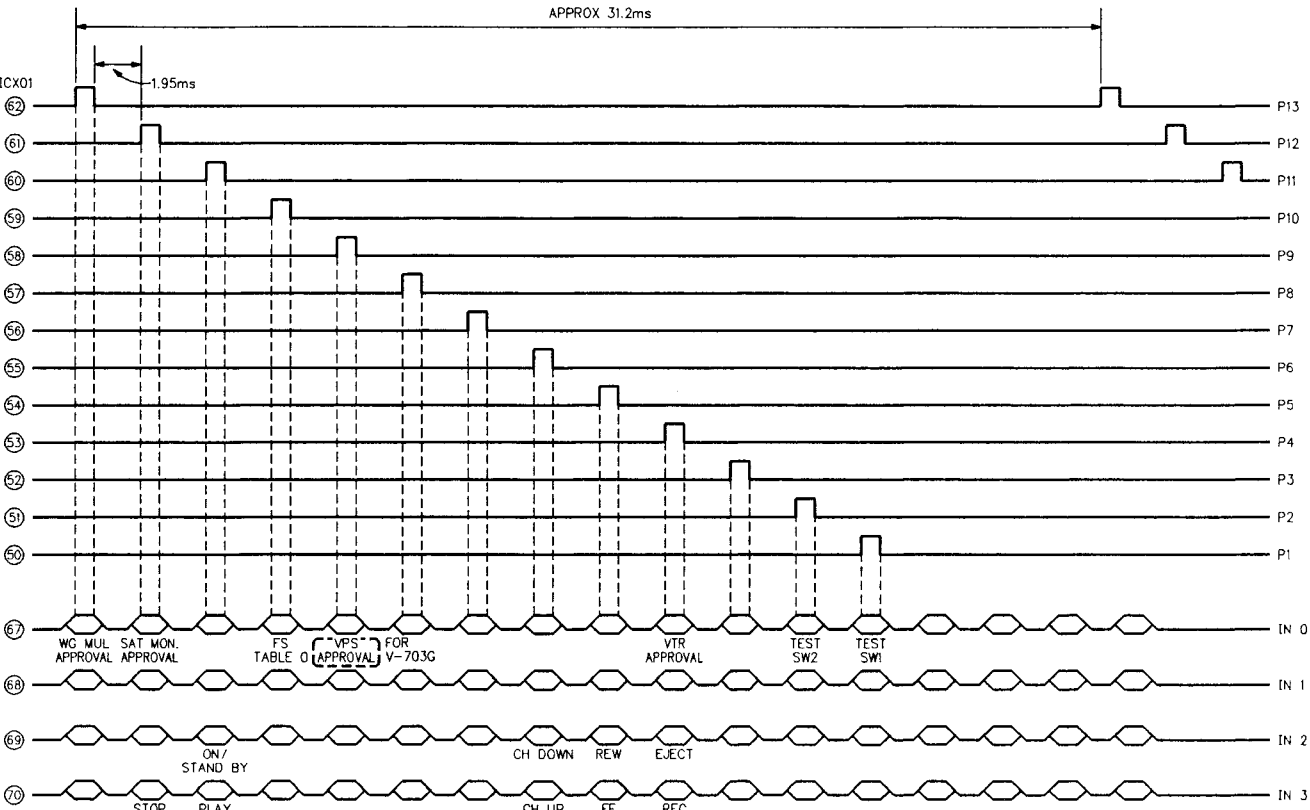


7-3. Timer Block Diagram

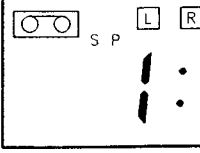
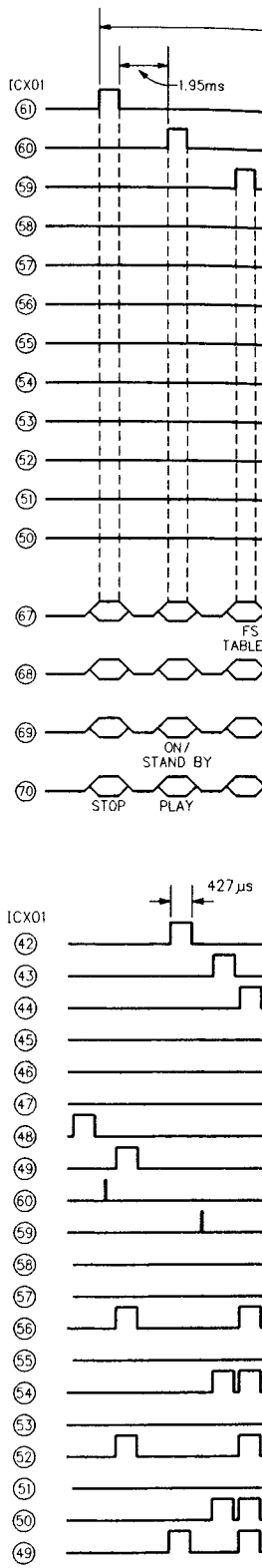
Timer Microcomputer Terminal Function



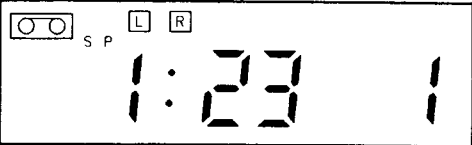
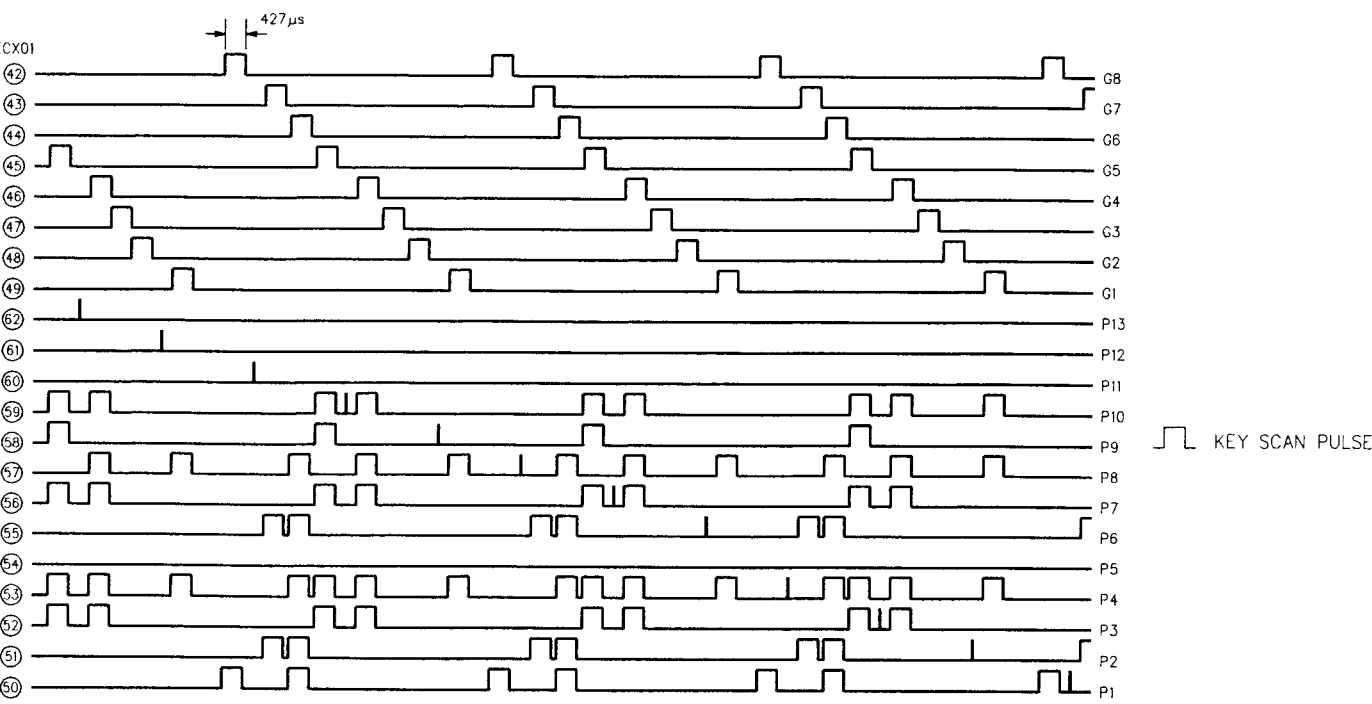
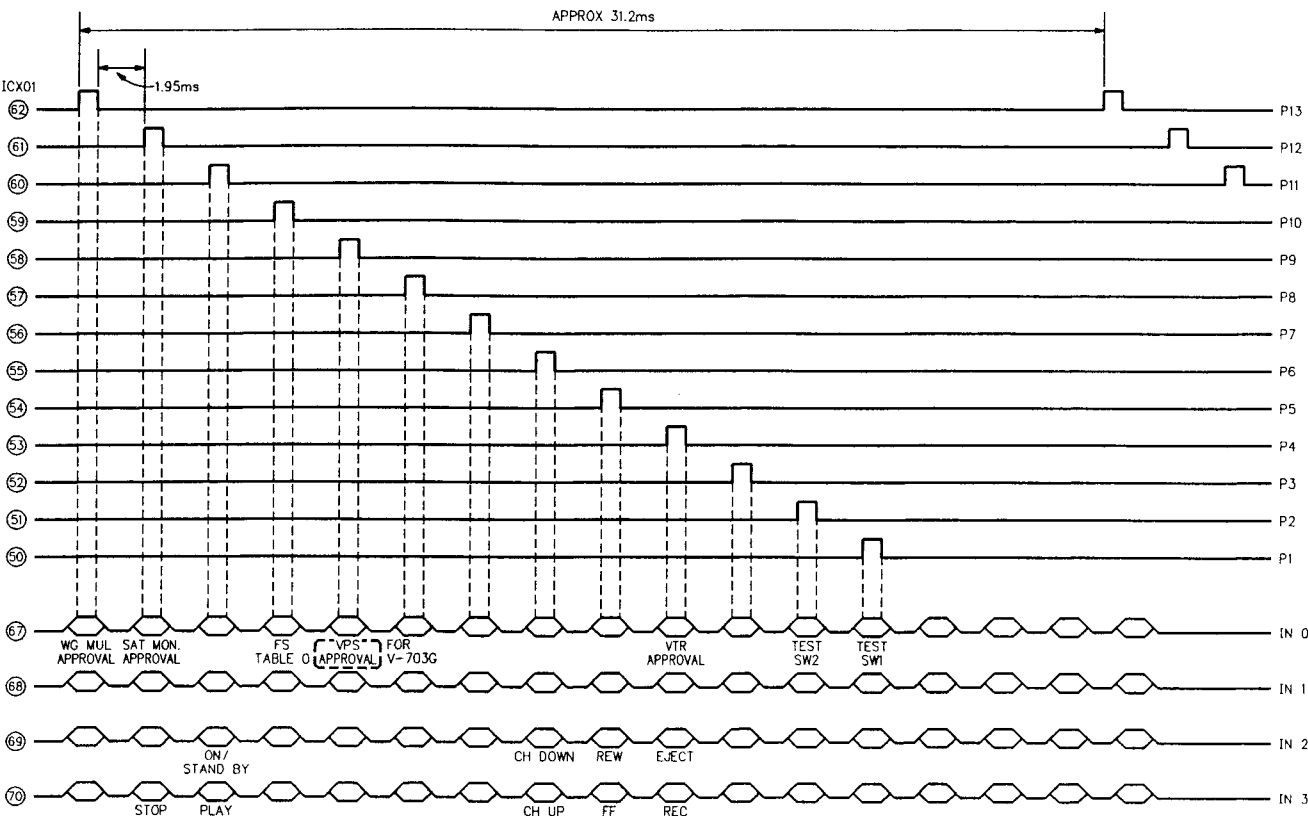
(V-703G/T)



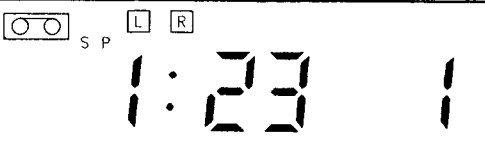
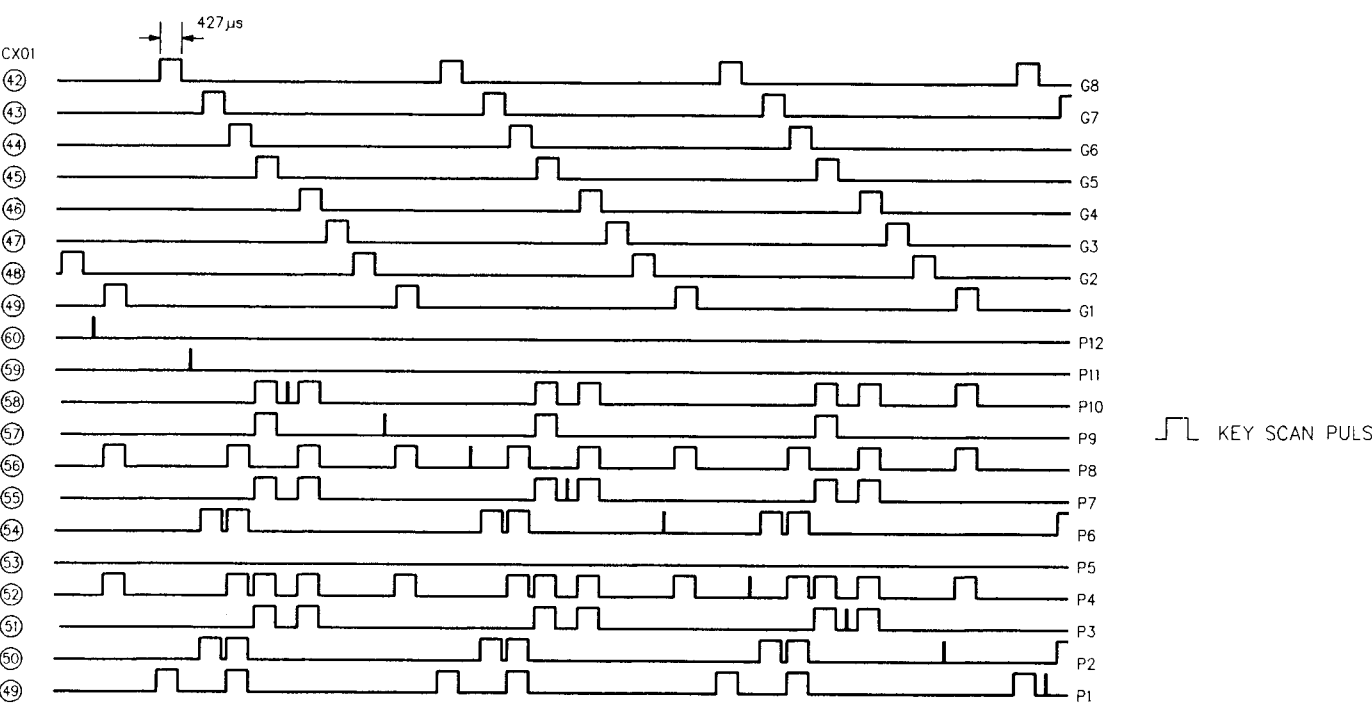
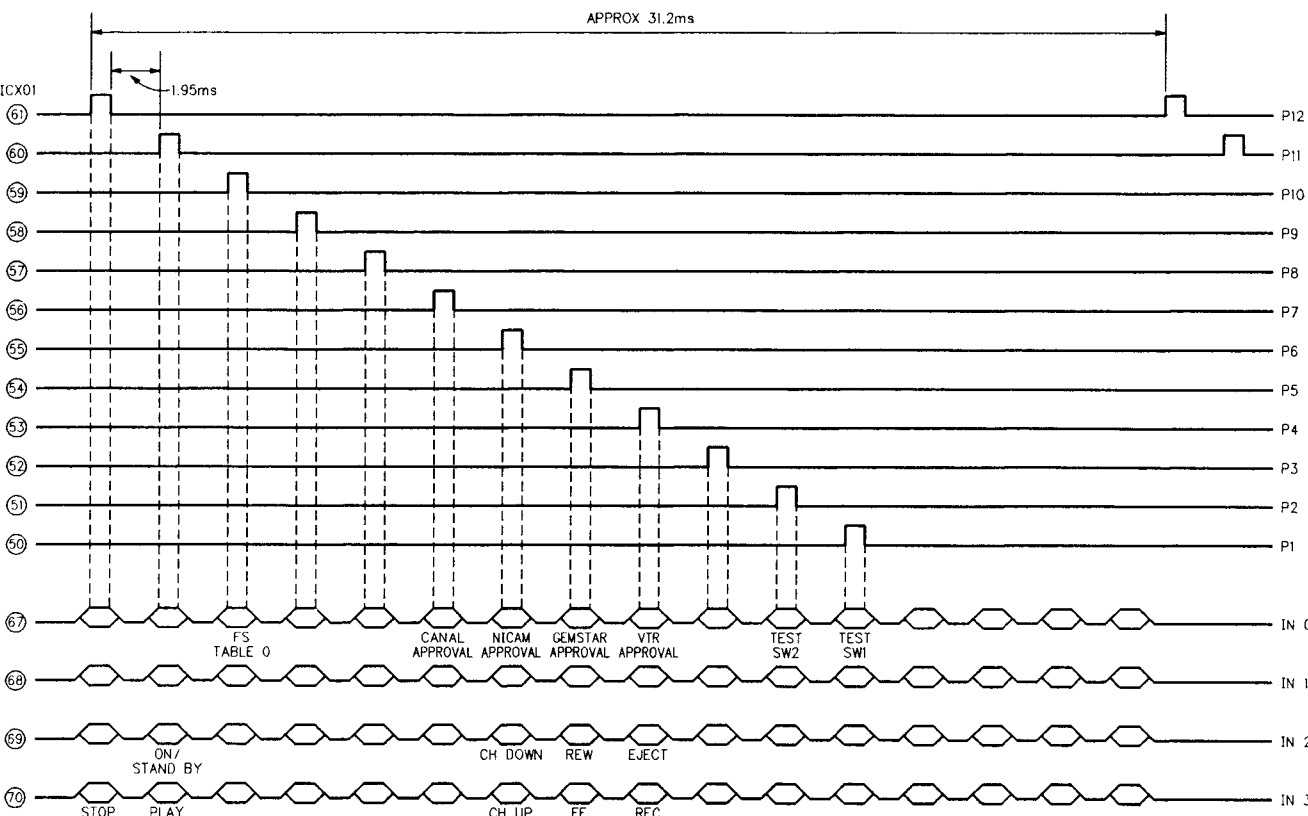
(V-703W)



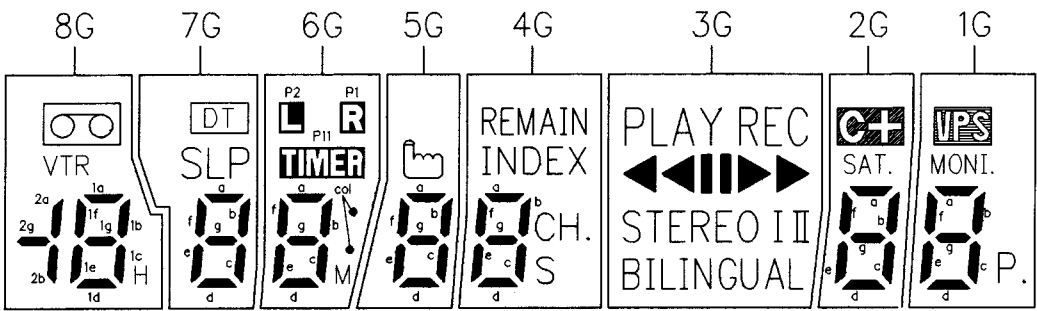
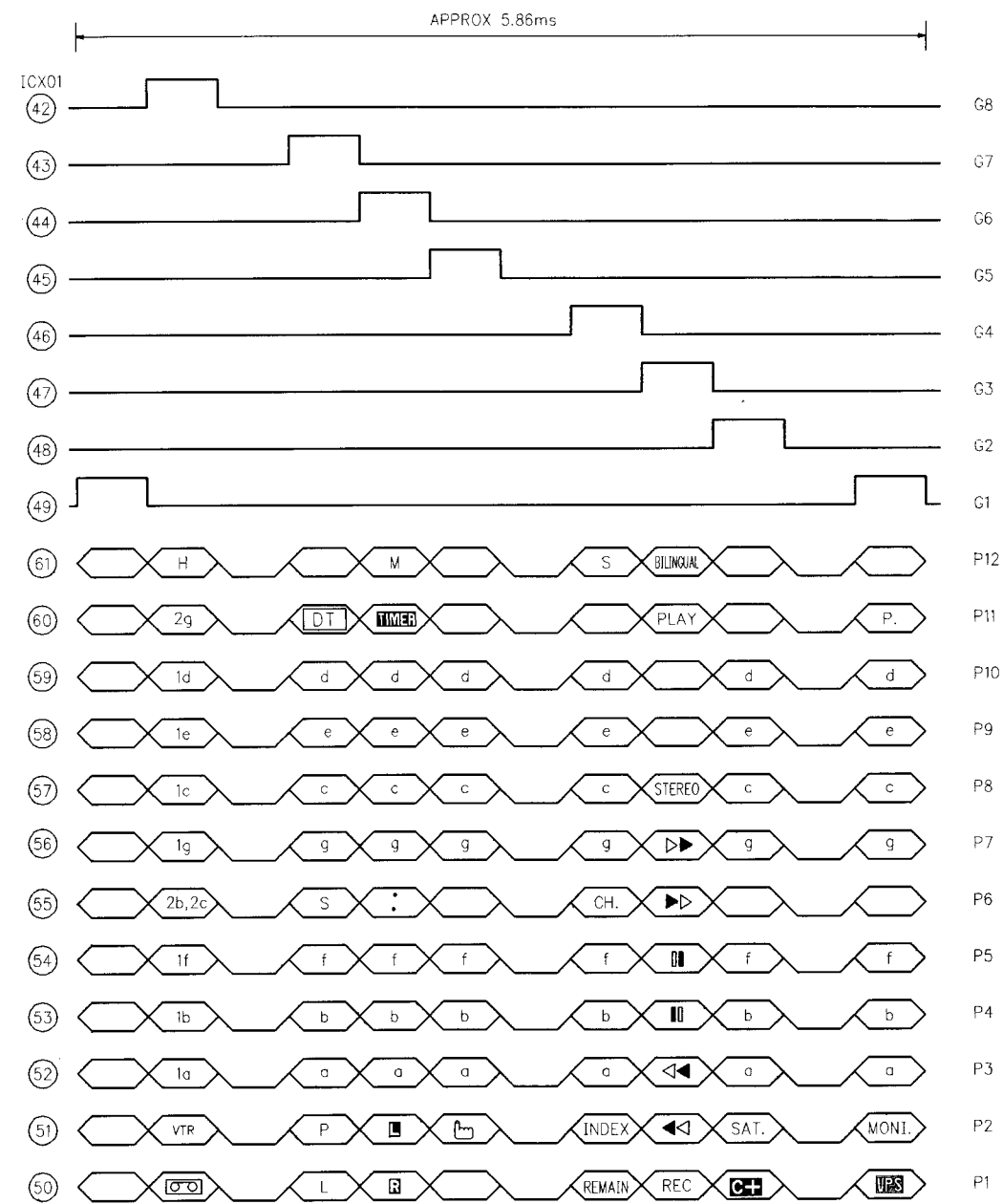
(V-703G/T)



(V-703W)



Key Display GX01 8-BT-142GK

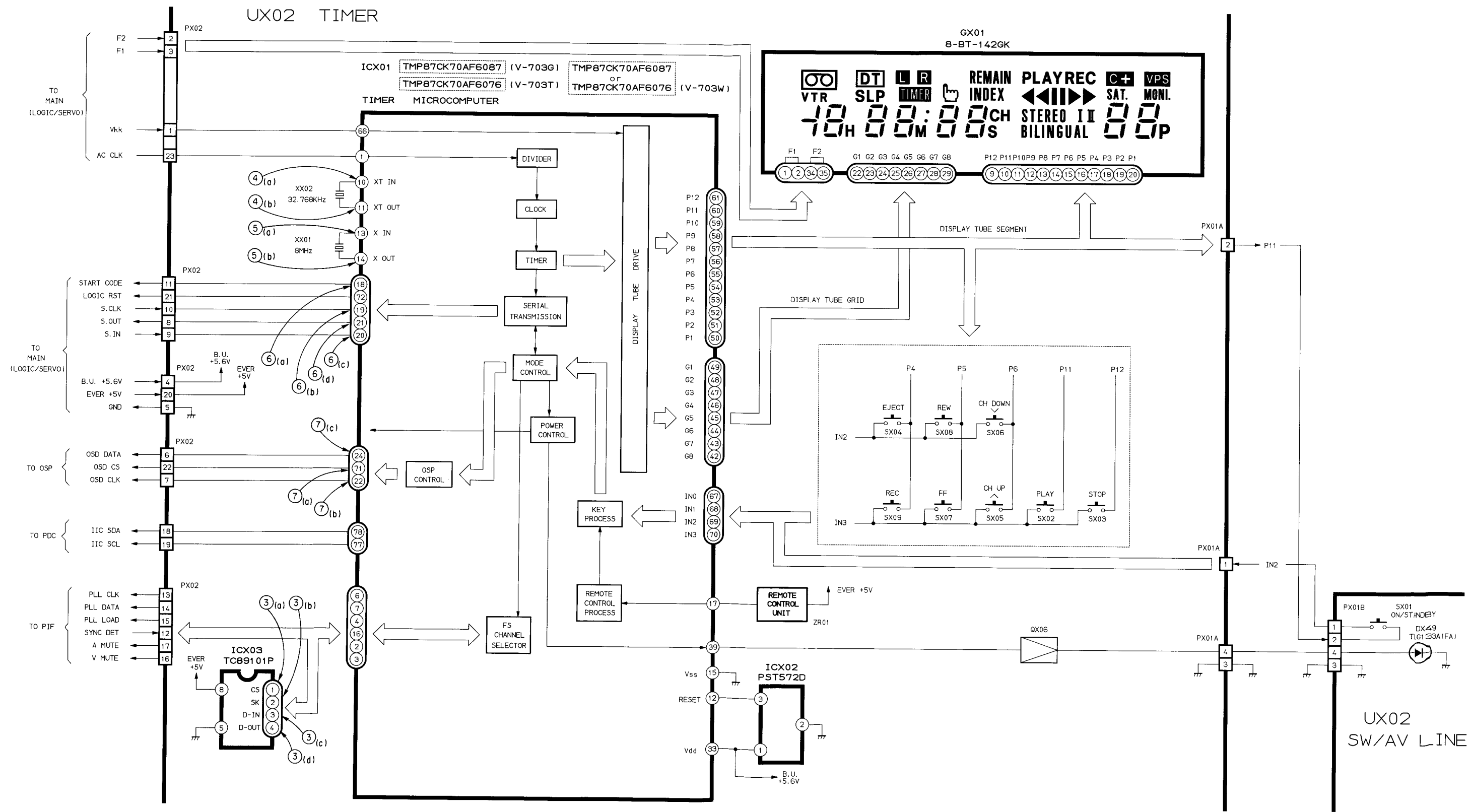


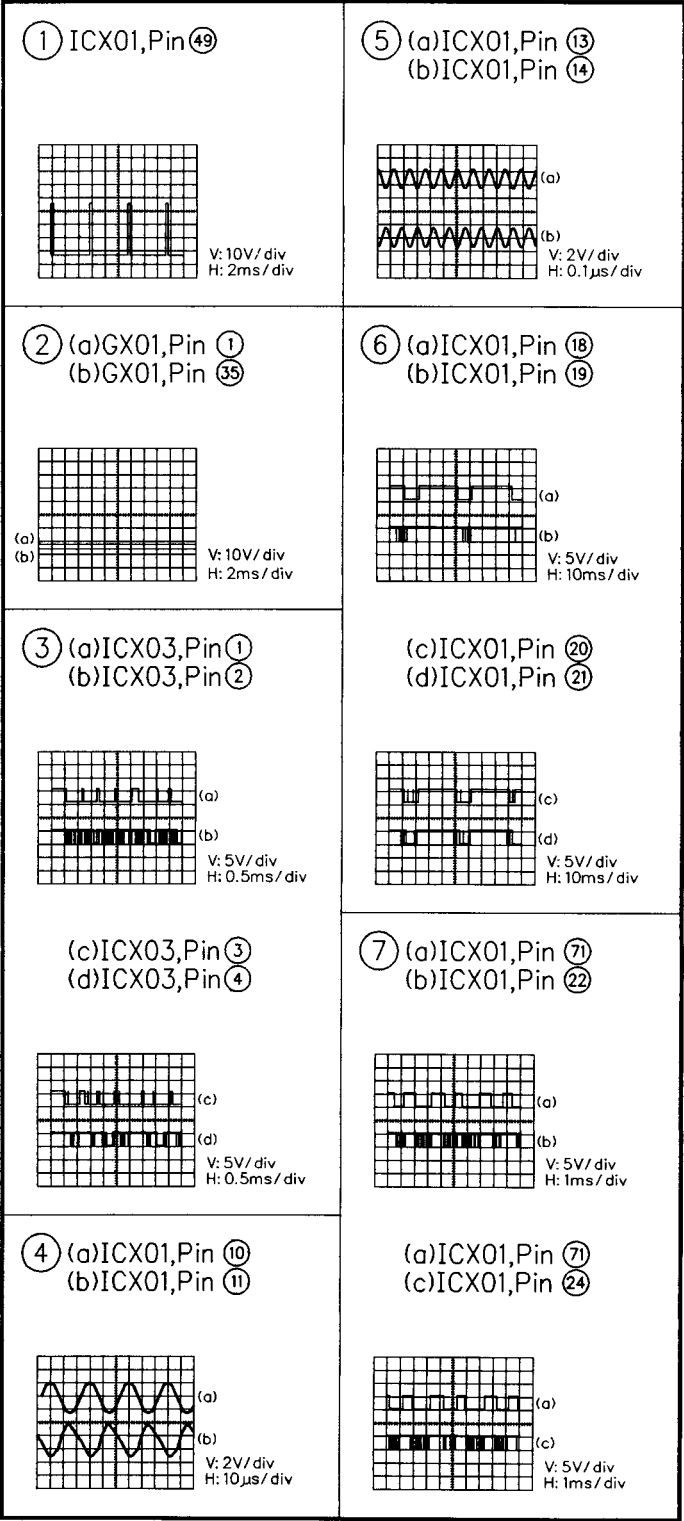
Display Pattern

Annode Connection

	8 G	7 G	6 G	5 G	4 G	3 G	2 G	1 G
P1		L			REMAIN	REC		
P2	VTR	P			INDEX		SAT.	MONI.
P3	1a	a	a	a	a		a	a
P4	1b	b	b	b	b		b	b
P5	1f	f	f	f	f		f	f
P6	2b,2c	S	:		CH.			
P7	1g	g	g	g	g		g	g
P8	1c	c	c	c	c	STEREO	c	c
P9	1e	e	e	e	e	I	e	e
P10	1d	d	d	d	d	II	d	d
P11	2g					PLAY		P.
P12	H		M		S	BILINGUAL		

Timer Block Diagram

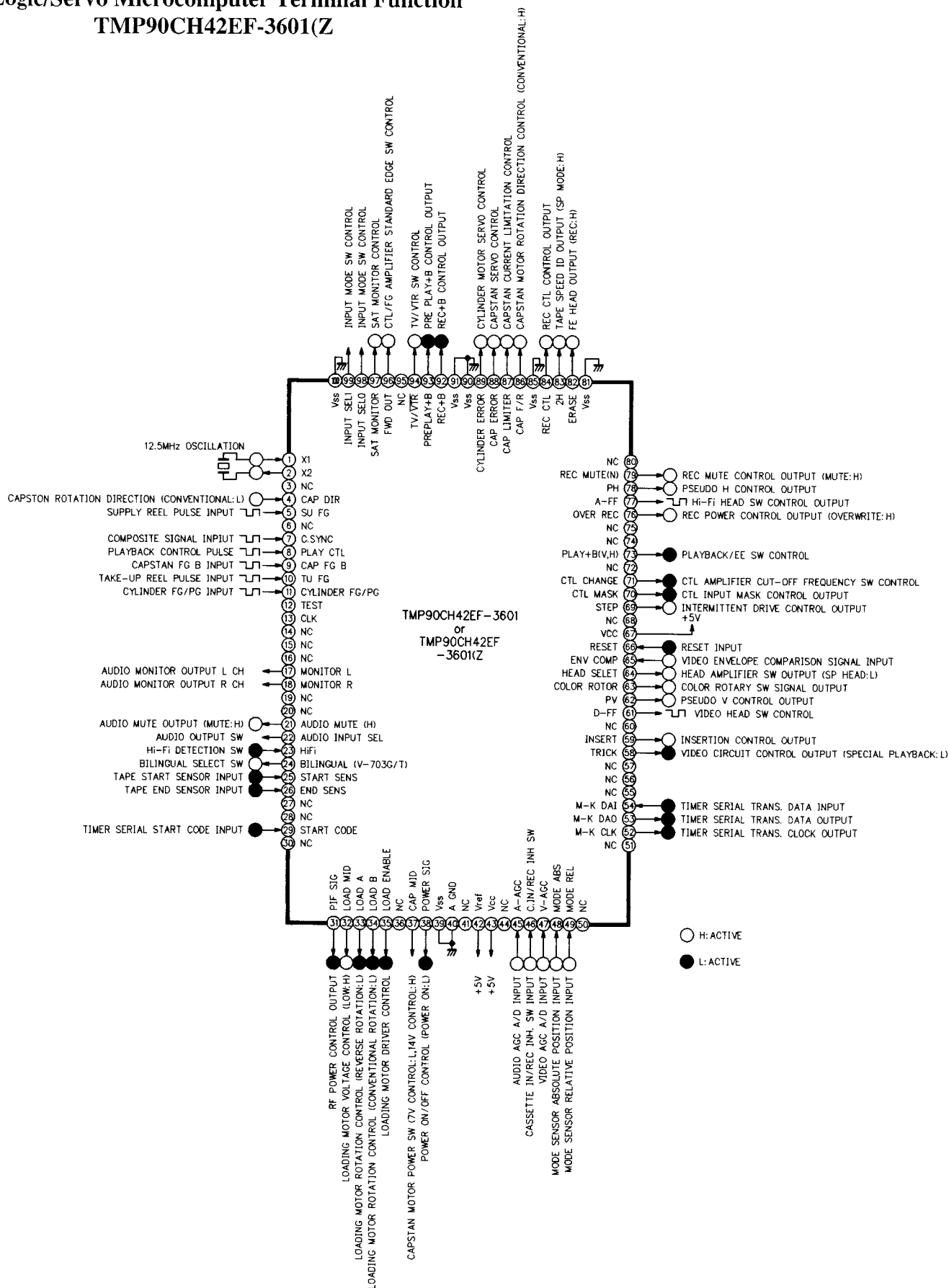






## 7-4. Logic/Servo Block Diagram

### Logic/Servo Microcomputer Terminal Function TMP90CH42EF-3601(Z)



Logic Mode Shift Table

SWITCH INPUT PRESENT MODE	EJECT	STOP	FF	REW	PLAY	PAUSE /STILL	SLOW (FWD)	REC	TIMER REC	POWER
SLOT IN	○	△	△	△	△	×	×	×	×	POWER OFF
SLOT OUT	—	×	×	×	×	×	×	×	×	POWER OFF
STOP	○	—	○	○	○	×	×	○	○	POWER OFF
FF	○	○	CUE *	○	○	×	×	×	○	POWER OFF
REW	○	○	○	REVIEW *	○	×	×	×	○	POWER OFF
CUE	○	○	CUE *	REVIEW *	○	×	×	×	○	POWER OFF
REVIEW	○	○	CUE *	REVIEW *	○	×	×	×	○	POWER OFF
PLAY	○	○	CUE *	REVIEW *	—	STILL	1/6 SLOW	×	○	POWER OFF
STILL	○	○	CUE *	REVIEW *	○ (NOTE 1)	PLAY	1/6 SLOW	REC PAUSE	○	POWER OFF
SLOW	○	○	CUE *	REVIEW *	○	STILL	○ (NOTE 2)	×	○	POWER OFF
REC	×	○	×	×	×	REC PAUSE	×	—	○	POWER OFF
REC PAUSE	×	○	×	×	×	REC	×	×	○	POWER OFF
TIMER REC	×	×	×	×	×	×	×	×	POWER OFF	POWER ON
POWER OFF	○	×	×	×	×	×	×	×	○	POWER ON

NOTE 1) FRAME FEED, 1/25 SLOW DURING PRESSING THE KEY.  
NOTE 2) SWITCH CYCLICALLY BETWEEN 1/6 SLOW AND 1/12 SLOW.

○ : SHIFTS TO KEY INPUT MODE.

△ : SHIFTS TO THE NEXT MODE AFTER FINISHING THE PRESENT MODE.

× : NO SHIFT (SAME MODE)

\* : NORMALLY "x5" IN CUE/REVIEW MODE. WHEN THE KEY IS KEPT PRESSING FOR MORE THEN 0.7sec AFTER CUE/REVIEW MODE BEGINS, THE MODE SHIFTS TO "x9-ACCELL SEARCH" WHILE THE KEY IS KEPT PRESSING. AND WHEN THE KEY IS KEPT PRESSING WITHIN 0.7sec, THE MODE SHIFTS TO FF/REW MODE.

IC501 TMP90CH42EF-3601(Z Output Polarity

PIN NO.	PORT	MODE PORT NAME	ACTIVE	SLOT IN	SLOT OUT	LOADING	UNLOAD ING	STOP	STANDBY	FF	REW	PLAY		REVIEW		CUE		STILL		SLOW		REC		REC PAUSE		POWER OFF
												SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	
21	P06	A.MUTE(H)	H	L	L	L	L	L	L	L	L	L		H		H		H		H		L		L		H
31	P80	PIF SIG	L	L	L	L	L	L	L	L	L	H		H		H		H		H		L		L		H
32	P81	LOAD MID	H	L	L	L	L	L	L	L	L	L		L		L		L		L		L		L		L
33	P82	LOAD A	L	H		H	L	H	H	H	H	H		H		H		H		H		H		H		H
34	P83	LOAD B	L	L		L	H	H	H	H	H	H		H		H		H		H		H		H		H
35	P84	LOAD ENABLE	L	L	L → H	L	L	H	H	H	H	H		H		H		H		H		H		H		H
37	P86	CAP MID	H	H	H	H	H	H	H	H	H	L		H		H		H		H		L		H		H
38	P87	POWER SIG	L	L	L	L	L	L	L	L	L	L		L		L		L		L		L		L		H
52	P50	M-K CLK		←	←	←	←	←	←	←	←	←		←		←		←		←		←		←		←
53	P51	M-K DAO		←	←	←	←	←	←	←	←	←		←		←		←		←		←		←		←
58	P56	TRICK	L	H	H	H	H	H	H	H	H	H		L		L		L		L		H		H		H
59	P57	INSERT	H	L	L	L	L	L	L	L	L	L		H		H		L		L		L		L		L
61	DFF	D.FF		L	L		←	L		←	←	←		←		←		←		←		←		←		L
62	PV	PV		L	L	L	L	L	L	L	L	L										L		L		L
63	CR	COLOR RTR		H	H			H		←	←	←		←		←		L H						←		H
64	HA	HEAD SELECT		L	L	L	L	L	L			L H				←		←		←		L H		L		L
69	P31	STEP		L	L	L	L	L	L	L	L	L		L		L		L				L		L		L
70	VT2	CTL MASK	L	H	H	H	H	H	H	H	H	H		H		H		H				H		H		H
71	P33	CTL CHANGE	L	H	H	H	H	H	H	L	L	H		H		H		H		H		H		H		H
73	P35	PLAY+B (V,H)	L	H	H	H	H	H	H	H	H	L		L		L		L		L		H		H		H
76	P20	OVER REC	H	L	L	L	L	L	L	L	L	L		L		L		L		L				L		L
77	P21	A FF		L	L		←	L		←	←	←		←		←		←		←		←		←		L
78	P22	PH		L	L	L	L	L	L	L	L	L										L		L		L
79	P23	REC MUTE (N)	L	H	H	H	H	H	H	H	H	H		H		H		H		H		L		H		H
82	P25	ERASE	H	L	L	L	L	L	L	L	L	L		L		L		L		L		H		L		L
83	P26	2H	L	H	H	H	H	H	H	H	H	H L		H L		H L		H L		H L		H L		H L		H
84	P27	REC CTL		OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN		OPEN		OPEN		OPEN		OPEN				OPEN		OPEN
86	P66	CAP F/R		L	H	L	L	L	L	L	H	H		L		H		H				H		H		H
87	P67	CAP LIMITTER	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM	PWM		PWM		PWM		L		PWM		PWM		PWM		PWM
88	PW1	CAP ERROR	PWM	L	L	PWM	PWM	L	L	PWM	PWM	PWM		PWM		PWM		L		PWM		PWM		L		L
89	PW0	CYLINDER ERROR	PWM	L	L	PWM	PWM	L	PWM	PWM	PWM	PWM		PWM		PWM		PWM		PWM		PWM		PWM		L
92	P70	REC+B	L	H	H	H	H	H	H	H	H	H		H		H		H		H		L		L		L
93	P71	PREPLAY+B	L	H	H	H	H	H	H	H	H	L		L		L		L		L		H		H		H
94	P72	TV/VTR		H	H	H	H	H	H	H	H	L		L		L		L		L		H		H		H
96	P74	FWD OUT		H	L	H	H	L	H	H	L	L		H		L		L				L		L		L

IC501 TMP90CH42EF-3601(Z Output Polarity (without depending

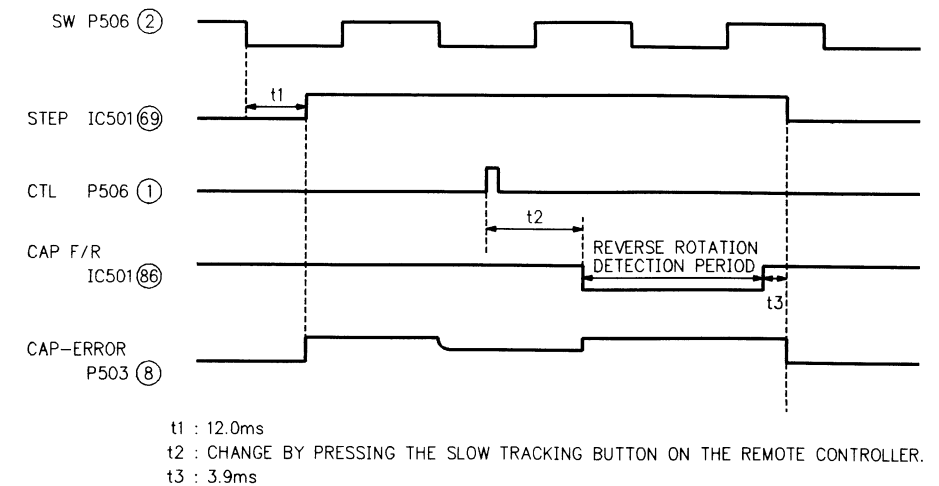
PIN NO.	PORT	PORT NAME												
17	P02	MONITOR L	OUTPUT THE AUDIO MONITOR OUTPUT BY A.SELECT KEY.											
18	P03	MONITOR R	MODE		STEREO		MAIN		SUB		CONVENTIONAL		POWER OFF	
			MONITOR L		H		H		L		L		L	
			MONITOR R			H		L		H		L		L
22	P07	A.INPUT	OUTPUT THE FOLLOWING SIGNALS FOR EACH INPUT.											
			INPUT MODE		TUNER		L1		L2		POWER OFF			
			SAT		ON	OFF	ON	OFF	ON	OFF	ON	OFF		
			A.INPUT		L	L	OPEN		H		L			
97	P75	SAT MONITOR	SAT MON ON : H SAT MON OFF : L											
98	P76	INPUT SEL0	OUTPUT THE FOLLOWING SIGNAL BY SWITCHING INPUT.											
99	P77	INPUT SEL1	INPUT MODE		TUNER		L1		L2		POWER OFF			
			INPUT SEL0		L		H		H	PRESERVE THE FORM CONDITION				
			INPUT SEL1		L		L		H	PRESERVE THE FORM CONDITION				

\* : NORMALLY "x5" IN CUE/REVIEW MODE. WHEN THE KEY IS KEPT PRESSING FOR MORE THEN 0.7sec AFTER CUE/REVIEW MODE BEGINS, THE MODE SHIFTS TO "x9-ACCELL SEARCH" WHILE THE KEY IS KEPT PRESSING. AND WHEN THE KEY IS KEPT PRESSING WITHIN 0.7sec, THE MODE SHIFTS TO FF/REW MODE.

REW	PLAY		REVIEW		CUE		STILL		SLOW		REC		REC PAUSE		POWER OFF
	SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	SP	LP	
L	L		H		H		H		H		L		L		H
L	H		H		H		H		H		L		L		H
L	L		L		L		L		L		L		L		L
H	H		H		H		H		H		H		H		H
H	H		H		H		H		H		H		H		H
H	H		H		H		H		H		H		H		H
H	L		H		H		H		H		L		H		H
L	L		L		L		L		L		L		L		H
←	←		←		←		←		←		←		←		←
←	←		←		←		←		←		←		←		←
H	H		L		L		L		L		H		H		H
L	L		H		H		L		L		L		L		L
←	←		←		←		←		←		←		←		L
L	L		□		□		□		□		L		L		L
←	←		←		←		L H		□		□		←		H
□	L H		□		←		←		←		L H		L □		L
L	L		L		L		L		□		L		L		L
H	H		H		H		H		□		H		H		H
L	H		H		H		H		H		H		H		H
H	L		L		L		L		L		H		H		H
L	L		L		L		L		L		□		L		L
←	←		←		←		←		←		←		←		L
L	L		□		□		□		□		L		L		L
H	H		H		H		H		H		L		H		H
L	L		L		L		L		L		H		L		L
H	H L		H L		H L		H L		H L		H L		H L		H
OPEN	OPEN		OPEN		OPEN		OPEN		OPEN		□		OPEN		OPEN
H	H		L		H		H		□		H		H		H
PWM	PWM		PWM		PWM		L		PWM		PWM		PWM		PWM
PWM	PWM		PWM		PWM		L		PWM		PWM		L		L
PWM	PWM		PWM		PWM		PWM		PWM		PWM		PWM		L
H	H		H		H		H		H		L		L		L
H	L		L		L		L		L		H		H		H
H	L		L		L		L		L		H		H		H
L	L		H		L		L		□		L		L		L

PIN NO.	PORT	PORT NAME																												
17	P02	MONITOR L	OUTPUT THE AUDIO MONITOR OUTPUT BY A.SELECT KEY.  <table border="1"> <thead> <tr> <th>MODE</th><th>STEREO</th><th>MAIN</th><th>SUB</th><th>CONVENTIONAL</th><th>POWER OFF</th></tr> </thead> <tbody> <tr> <td>MONITOR L</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td></tr> <tr> <td>MONITOR R</td><td>H</td><td>L</td><td>H</td><td>L</td><td>L</td></tr> </tbody> </table>	MODE	STEREO	MAIN	SUB	CONVENTIONAL	POWER OFF	MONITOR L	H	H	L	L	L	MONITOR R	H	L	H	L	L									
MODE	STEREO	MAIN		SUB	CONVENTIONAL	POWER OFF																								
MONITOR L	H	H		L	L	L																								
MONITOR R	H	L	H	L	L																									
18	P03	MONITOR R																												
22	P07	A.INPUT	OUTPUT THE FOLLOWING SIGNALS FOR EACH INPUT.  <table border="1"> <thead> <tr> <th>INPUT MODE</th><th colspan="2">TUNER</th><th colspan="2">L1</th><th colspan="2">L2</th><th colspan="2">POWER OFF</th></tr> </thead> <tbody> <tr> <td>SAT</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr> <tr> <td>A.INPUT</td><td>L</td><td>L</td><td colspan="2">OPEN</td><td colspan="2">H</td><td colspan="2">L</td></tr> </tbody> </table>	INPUT MODE	TUNER		L1		L2		POWER OFF		SAT	ON	OFF	ON	OFF	ON	OFF	ON	OFF	A.INPUT	L	L	OPEN		H		L	
INPUT MODE	TUNER		L1		L2		POWER OFF																							
SAT	ON	OFF	ON	OFF	ON	OFF	ON	OFF																						
A.INPUT	L	L	OPEN		H		L																							
97	P75	SAT MONITOR	SAT MON ON : H SAT MON OFF : L																											
98	P76	INPUT SEL0	OUTPUT THE FOLLOWING SIGNAL BY SWITCHING INPUT.  <table border="1"> <thead> <tr> <th>INPUT MODE</th><th>TUNER</th><th>L1</th><th>L2</th><th>POWER OFF</th></tr> </thead> <tbody> <tr> <td>INPUT SEL0</td><td>L</td><td>H</td><td>H</td><td>PRESERVE THE FORMER CONDITION</td></tr> <tr> <td>INPUT SEL1</td><td>L</td><td>L</td><td>H</td><td>PRESERVE THE FORMER CONDITION</td></tr> </tbody> </table>	INPUT MODE	TUNER	L1	L2	POWER OFF	INPUT SEL0	L	H	H	PRESERVE THE FORMER CONDITION	INPUT SEL1	L	L	H	PRESERVE THE FORMER CONDITION												
INPUT MODE	TUNER	L1		L2	POWER OFF																									
INPUT SEL0	L	H		H	PRESERVE THE FORMER CONDITION																									
INPUT SEL1	L	L	H	PRESERVE THE FORMER CONDITION																										
99	P77	INPUT SEL1																												

### Slow timing chart (SP)



The diagram shows the timing of five signals during a reverse rotation detection period:

- SW (P506 ②):** A square wave signal.
- STEP (IC501 ⑥9):** A pulse signal that starts at time  $t_4$  and ends at time  $t_6$ .
- CTL (P506 ①):** A signal that transitions from low to high during the reverse rotation detection period.
- CAP F/R (IC501 ⑥6):** A signal that transitions from high to low during the reverse rotation detection period.
- CAP-ERROR (P503 ⑧):** A signal that transitions from low to high during the reverse rotation detection period.

The reverse rotation detection period is indicated by a bracket labeled "REVERSE ROTATION DETECTION PERIOD" and is bounded by dashed vertical lines. The time intervals  $t_4$ ,  $t_5$ , and  $t_6$  are marked on the timeline.

$t_4$  : 23.9ms  
 $t_5$  : CHANGE BY PRESSING THE SLOW TRACKING BUTTON ON THE REMOTE CONTROLLER.  
 $t_6$  : 3.6ms

Timing diagram for the CAP REC SYSTEM. The diagram shows the relationship between several signals over time:

- VIDEO SIGNAL**: A series of horizontal sync pulses.
- C-SYNC**: A series of vertical sync pulses.
- D-FF IC501 (6)**: A digital signal that transitions from low to high at the start of a video frame and back to low at the end of the frame.
- A-FF IC501 (7)**: A digital signal that transitions from low to high at the start of a video frame and back to low at the end of the frame.
- CAP REC SYSTEM**: A digital signal that transitions from low to high at the start of a video frame and back to low at the end of the frame.
- REC CTL (SP) IC501 (84)**: A digital signal that transitions from low to high at the start of a video frame and back to low at the end of the frame.
- REC CTL (LP) IC501 (84)**: A digital signal that transitions from low to high at the start of a video frame and back to low at the end of the frame.

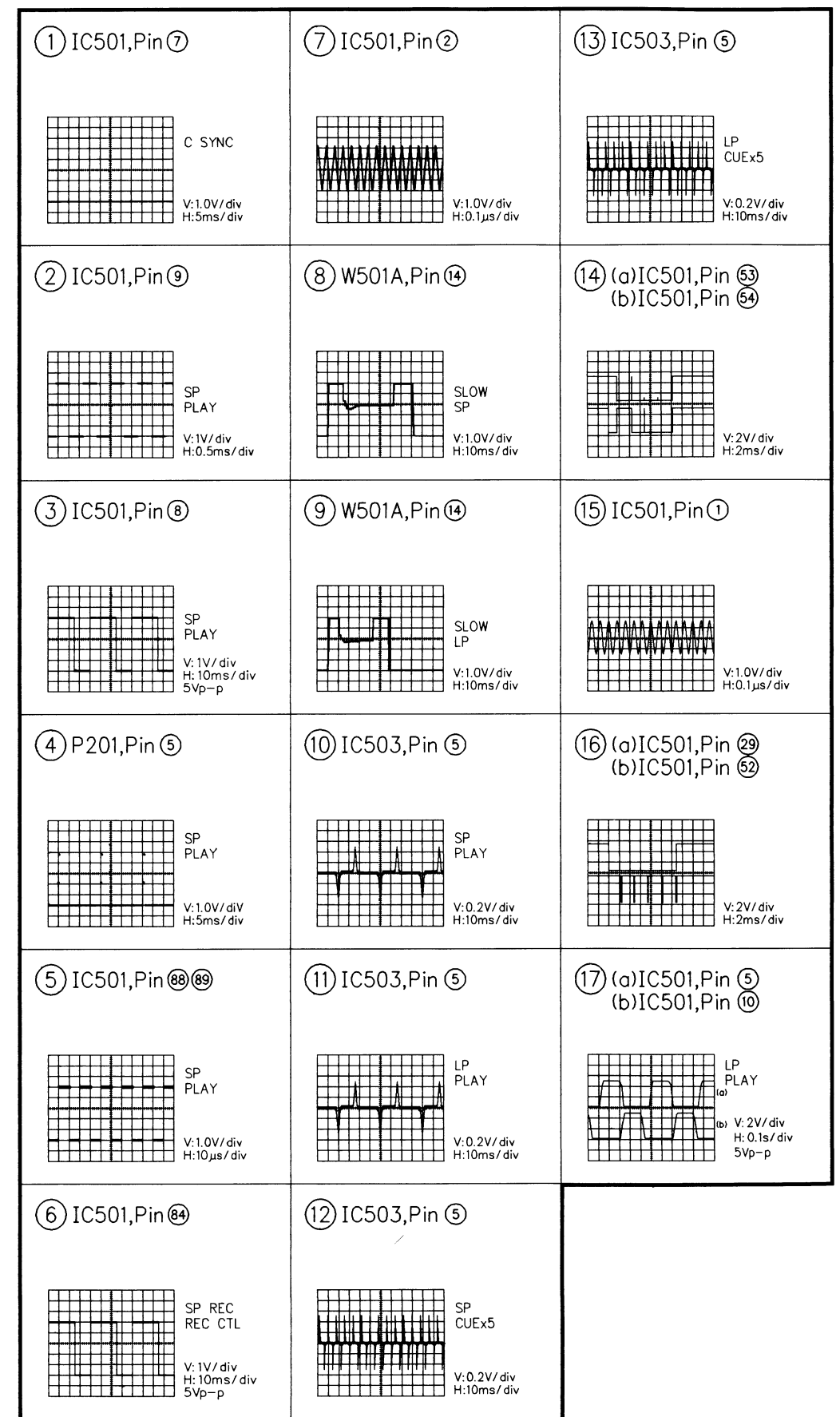
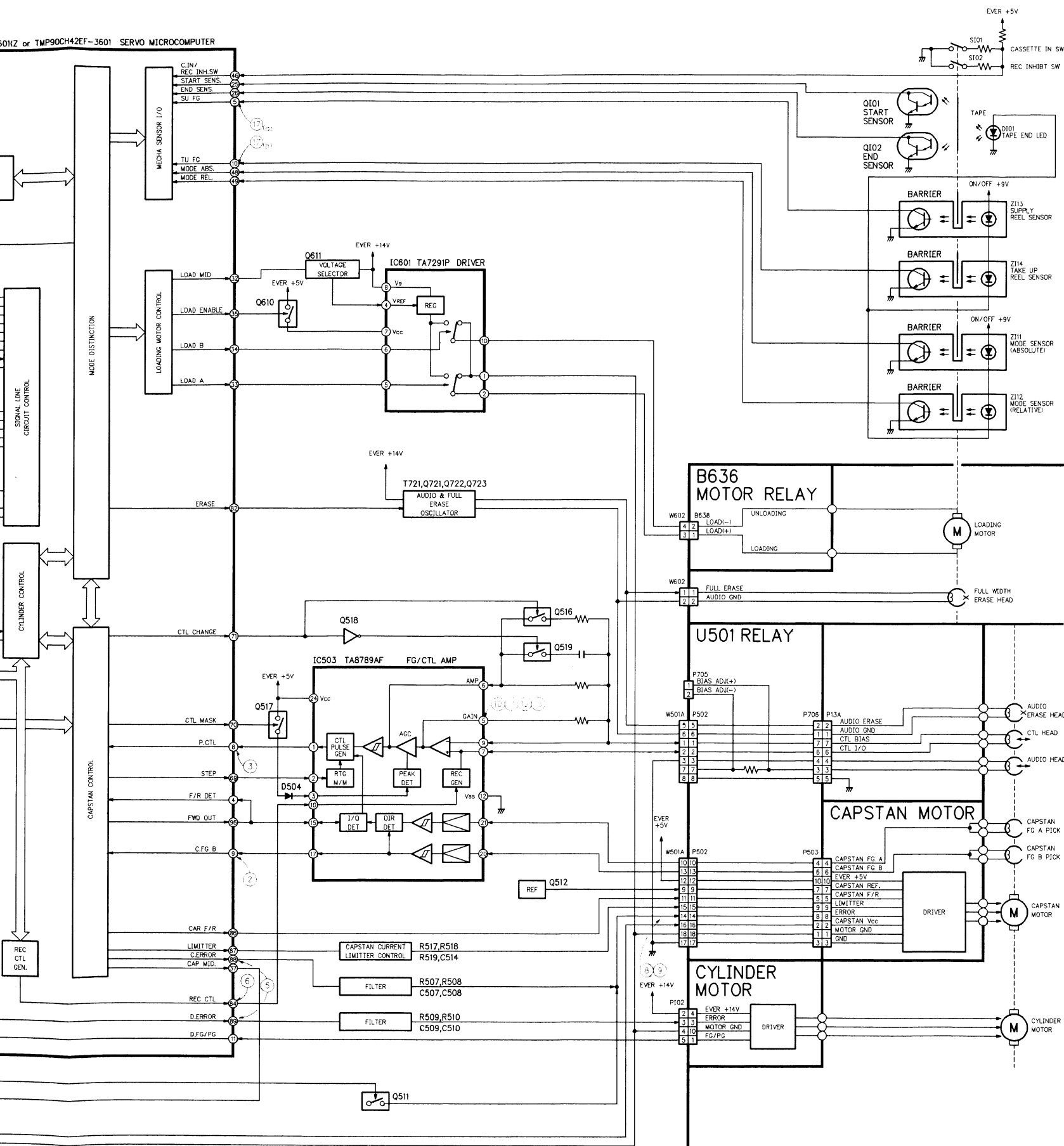
Key timing parameters are indicated:

- 6.5H**: Duration of the horizontal sync pulse.
- 13.3ms**: Duration of the horizontal sync pulse.
- t7**: Duration of the horizontal sync pulse.
- t8**: Duration of the horizontal sync pulse.

Legend:

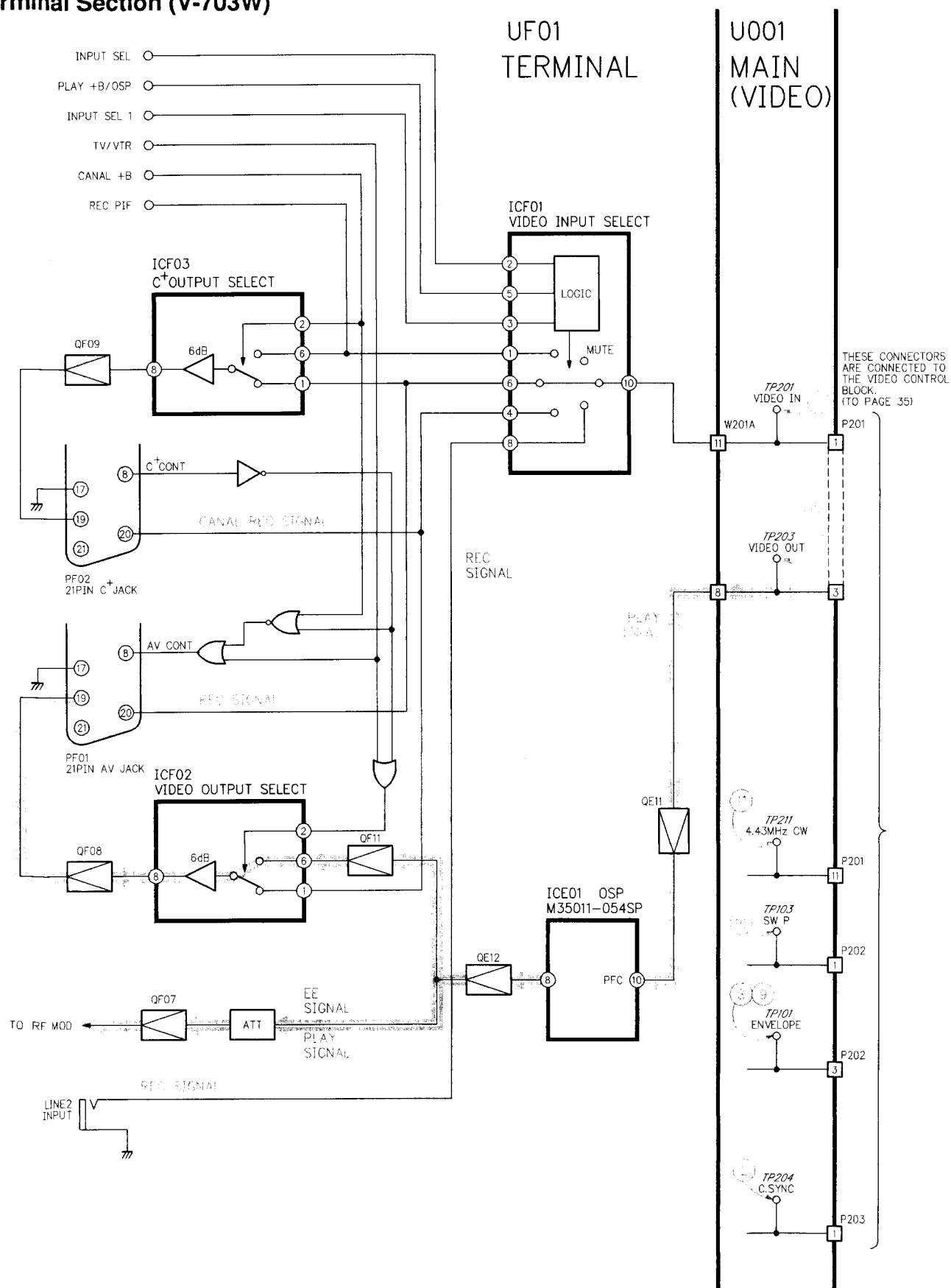
- t7: 12.0 msec
- t8: 27.8 msec

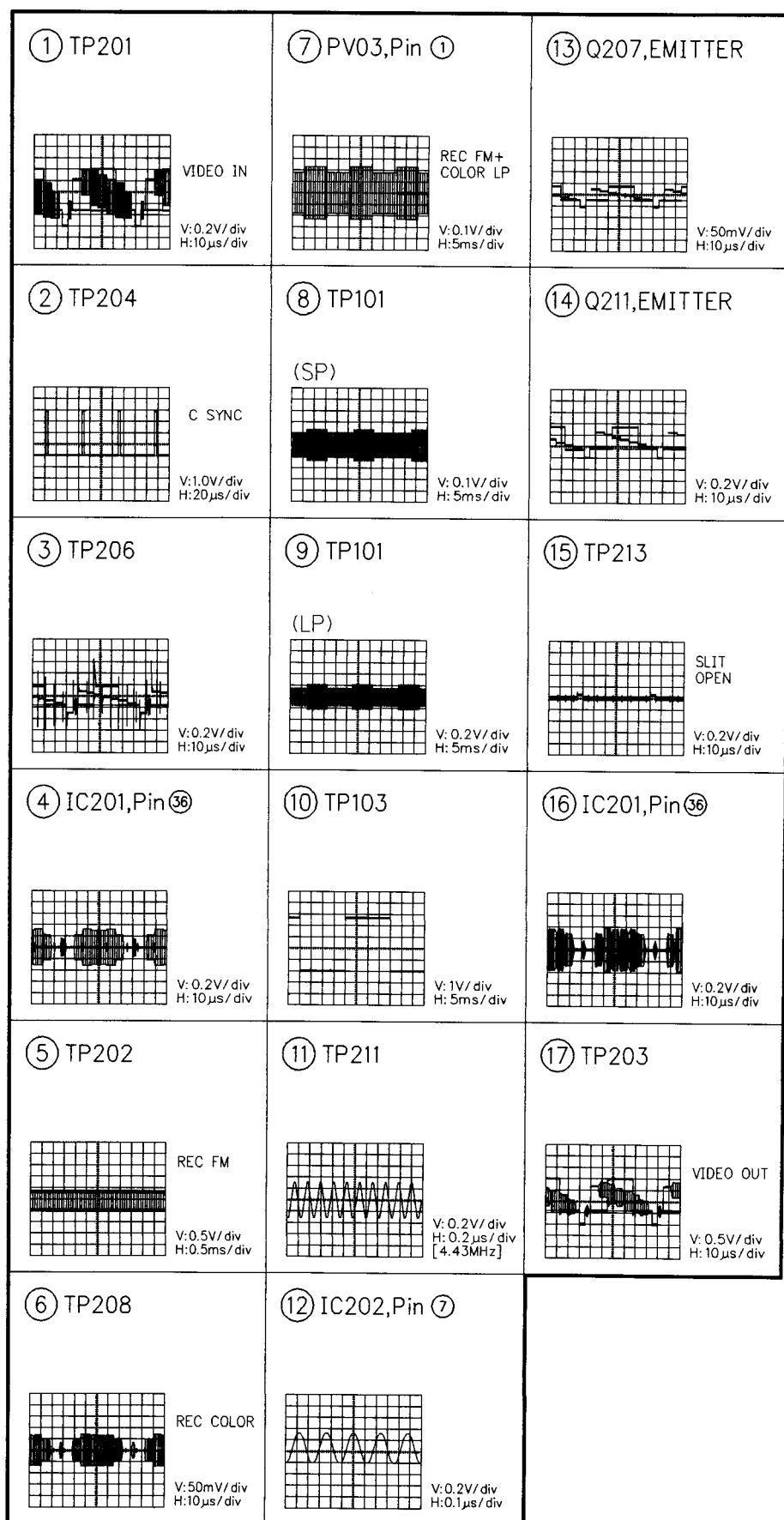




## 7-5. Video Block Diagram

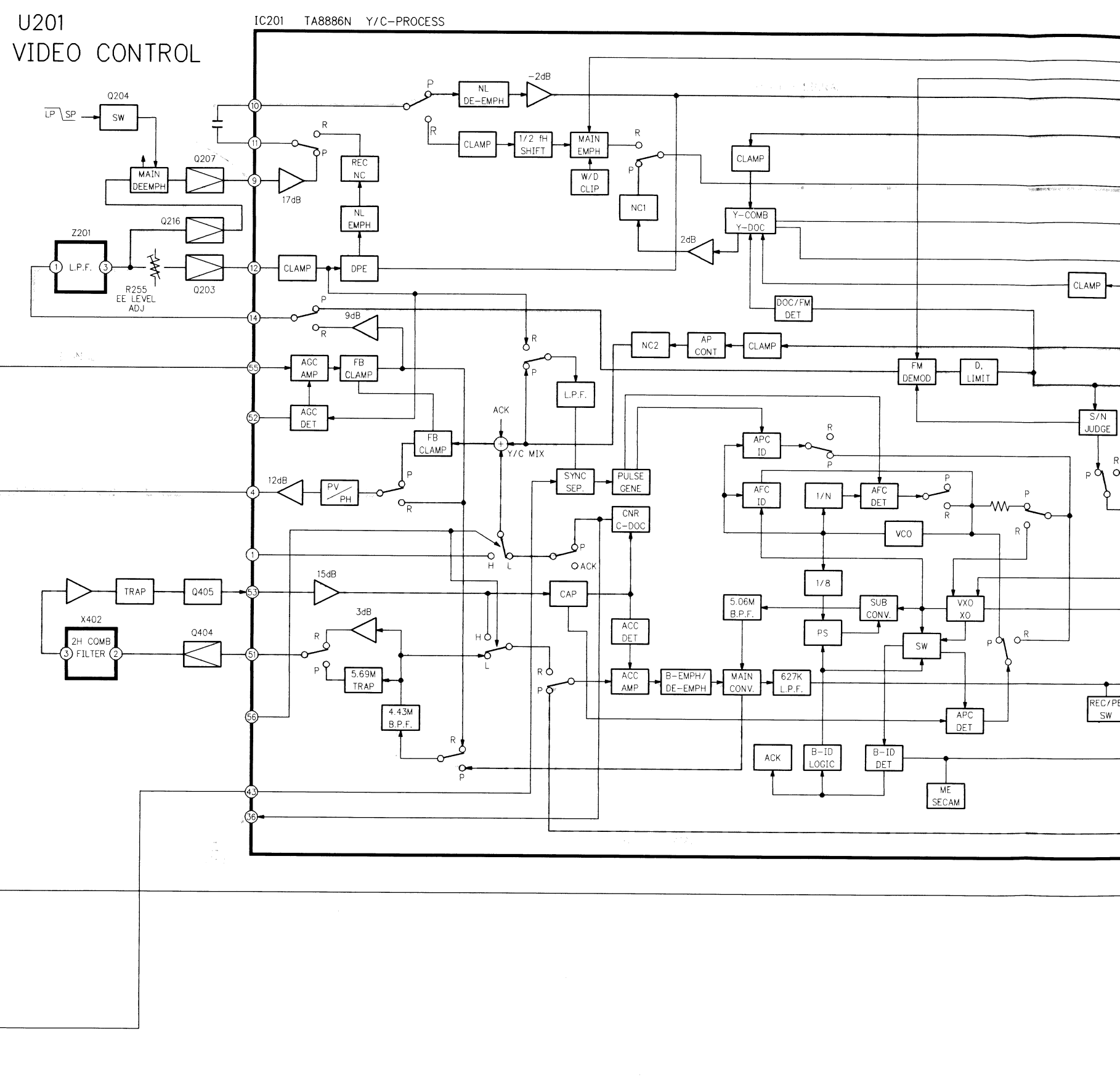
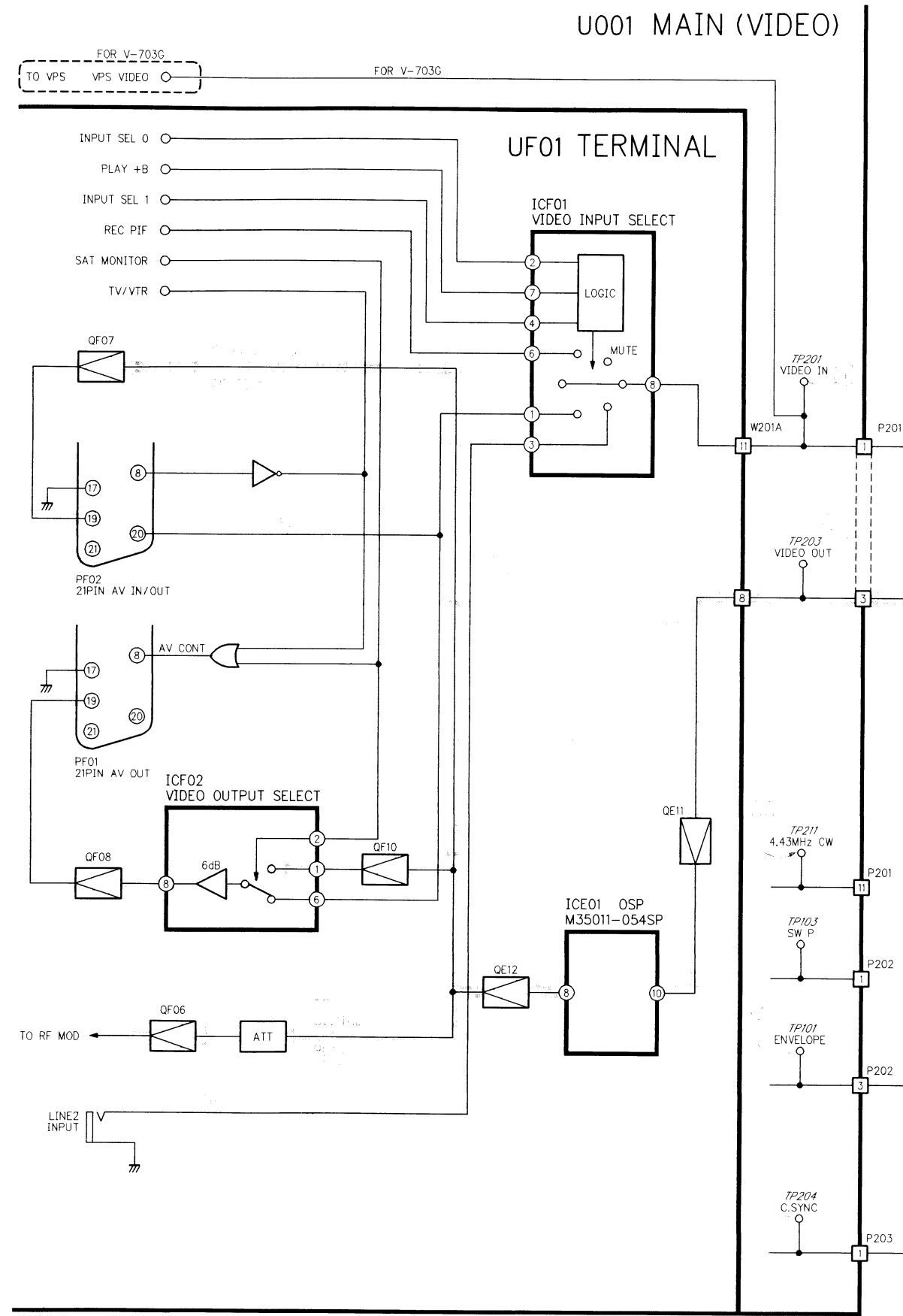
### Terminal Section (V-703W)



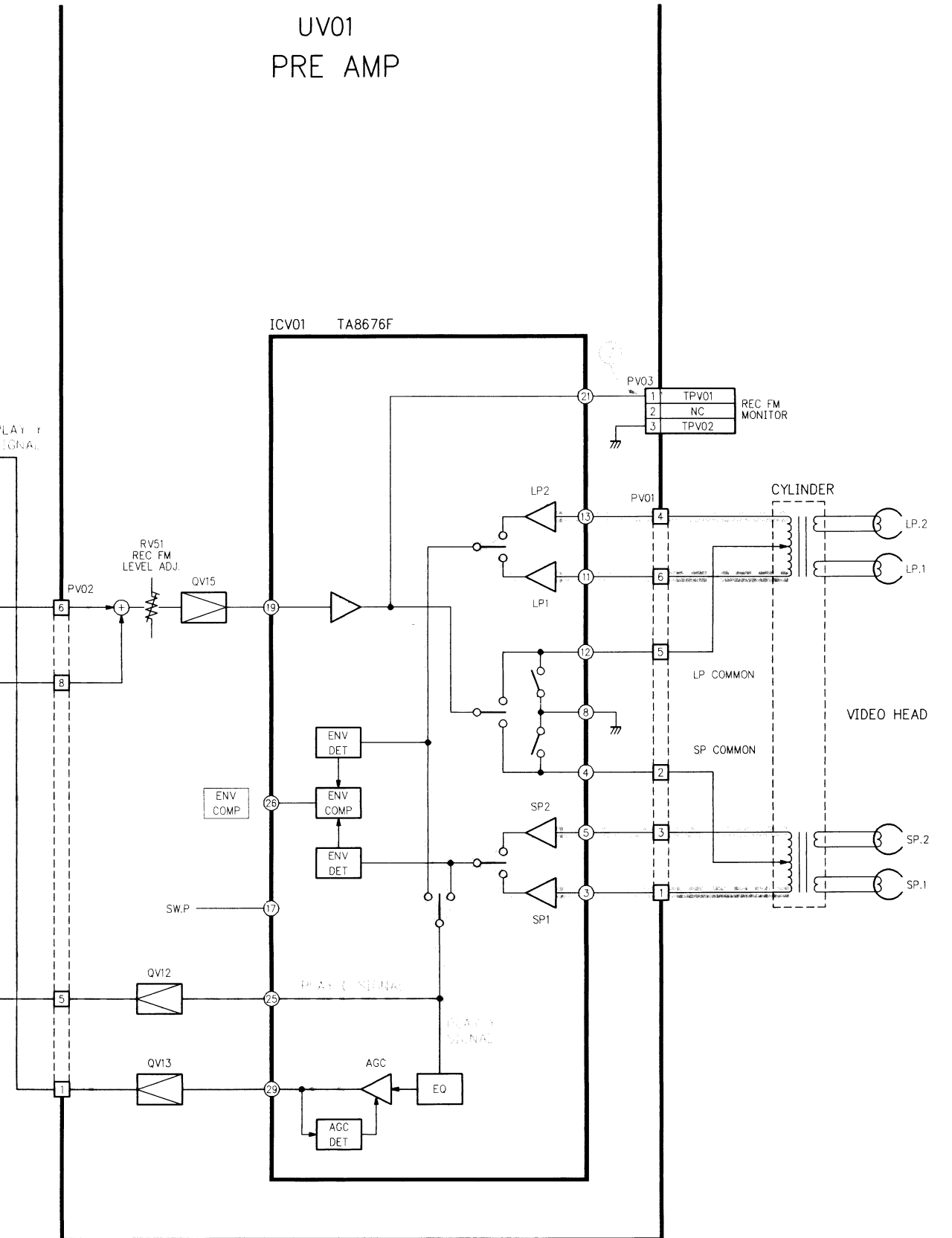
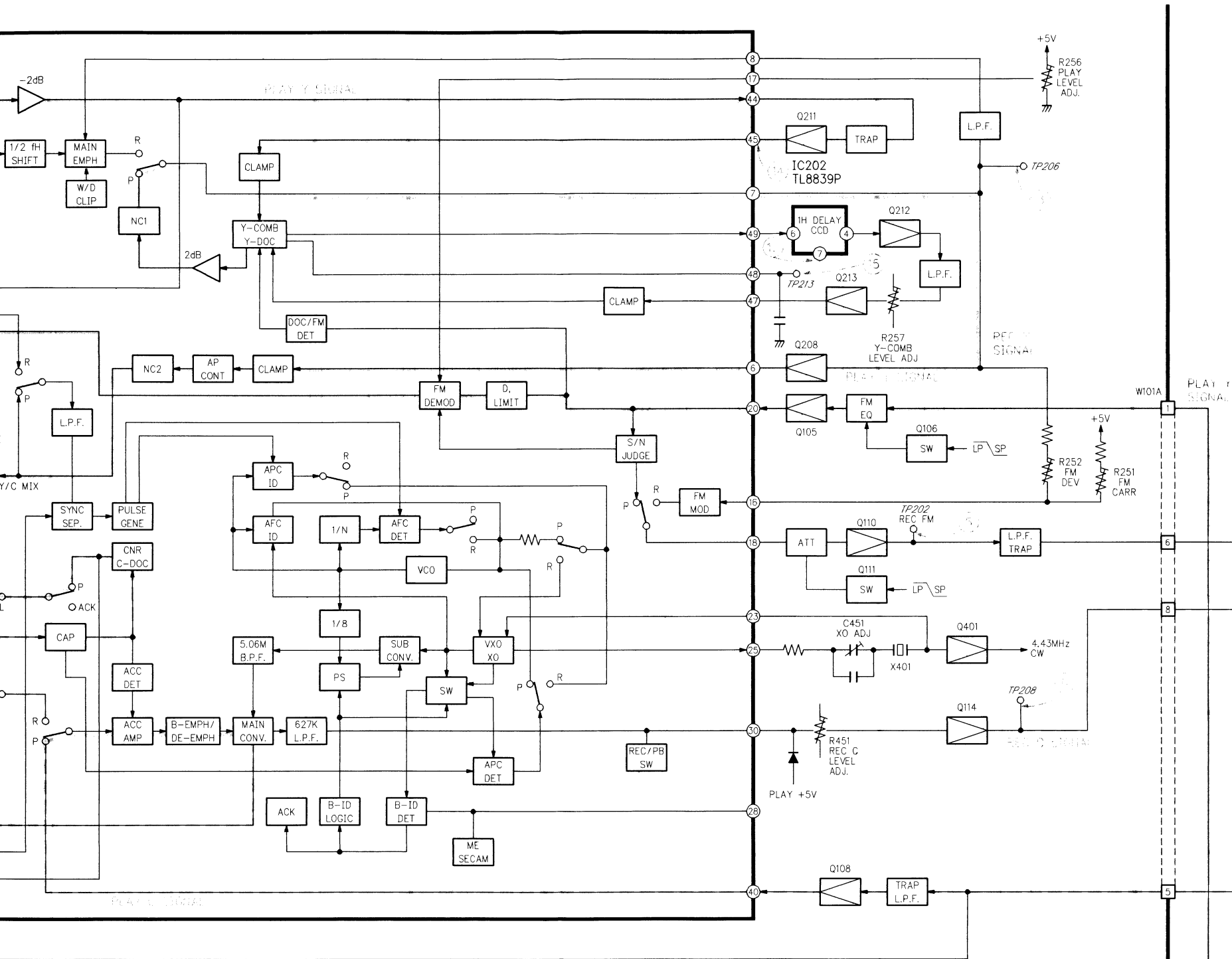


Terminal Section (V-703G/T)

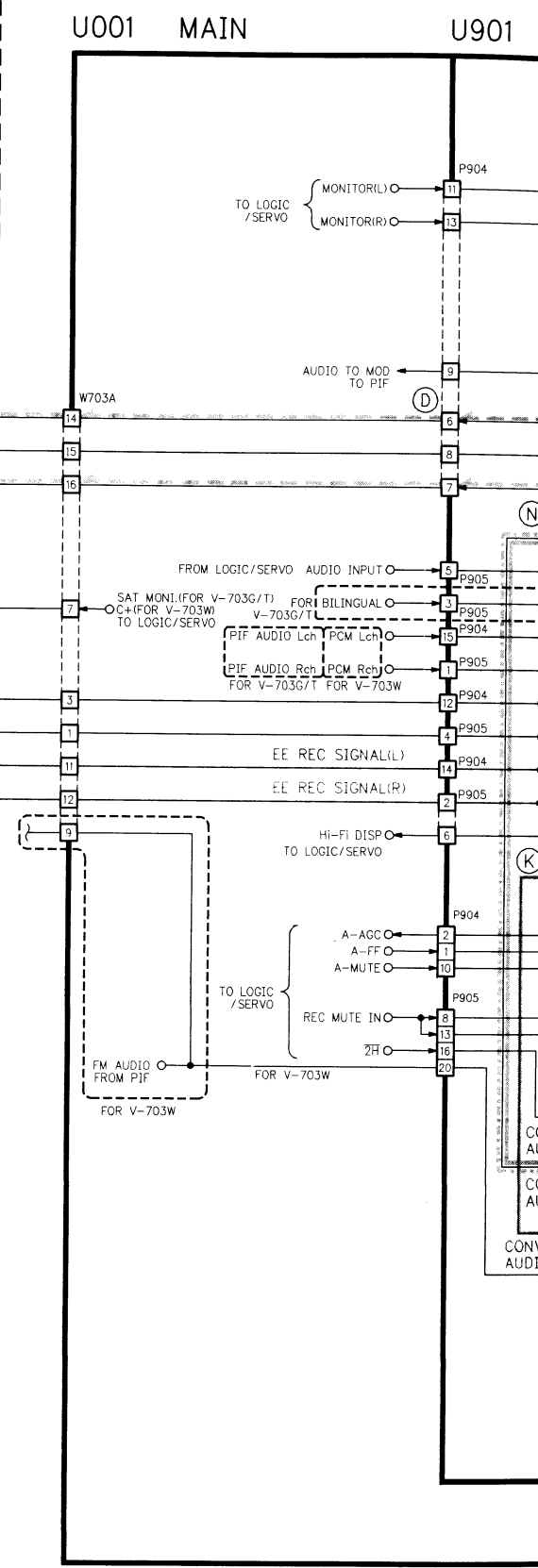
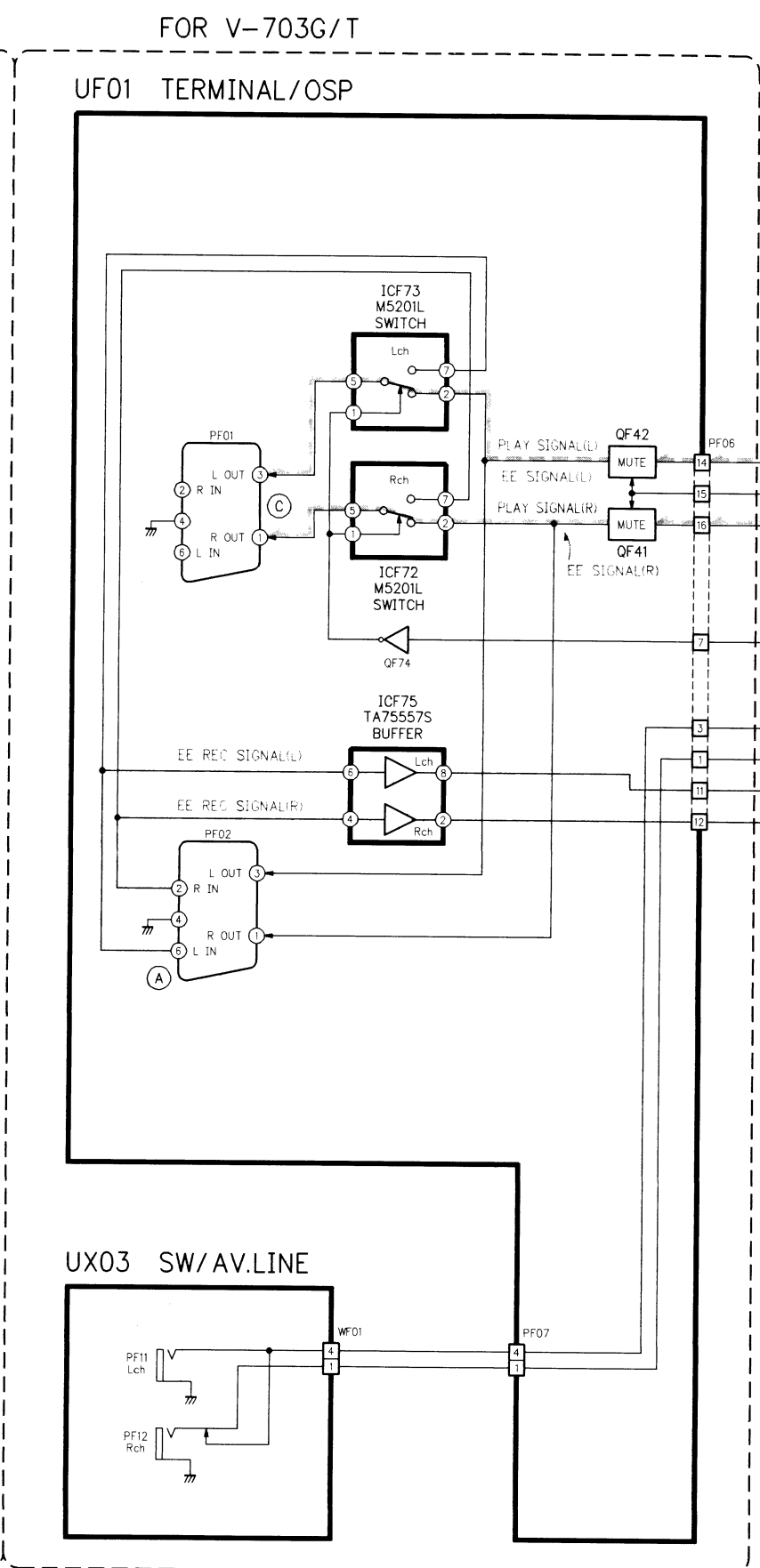
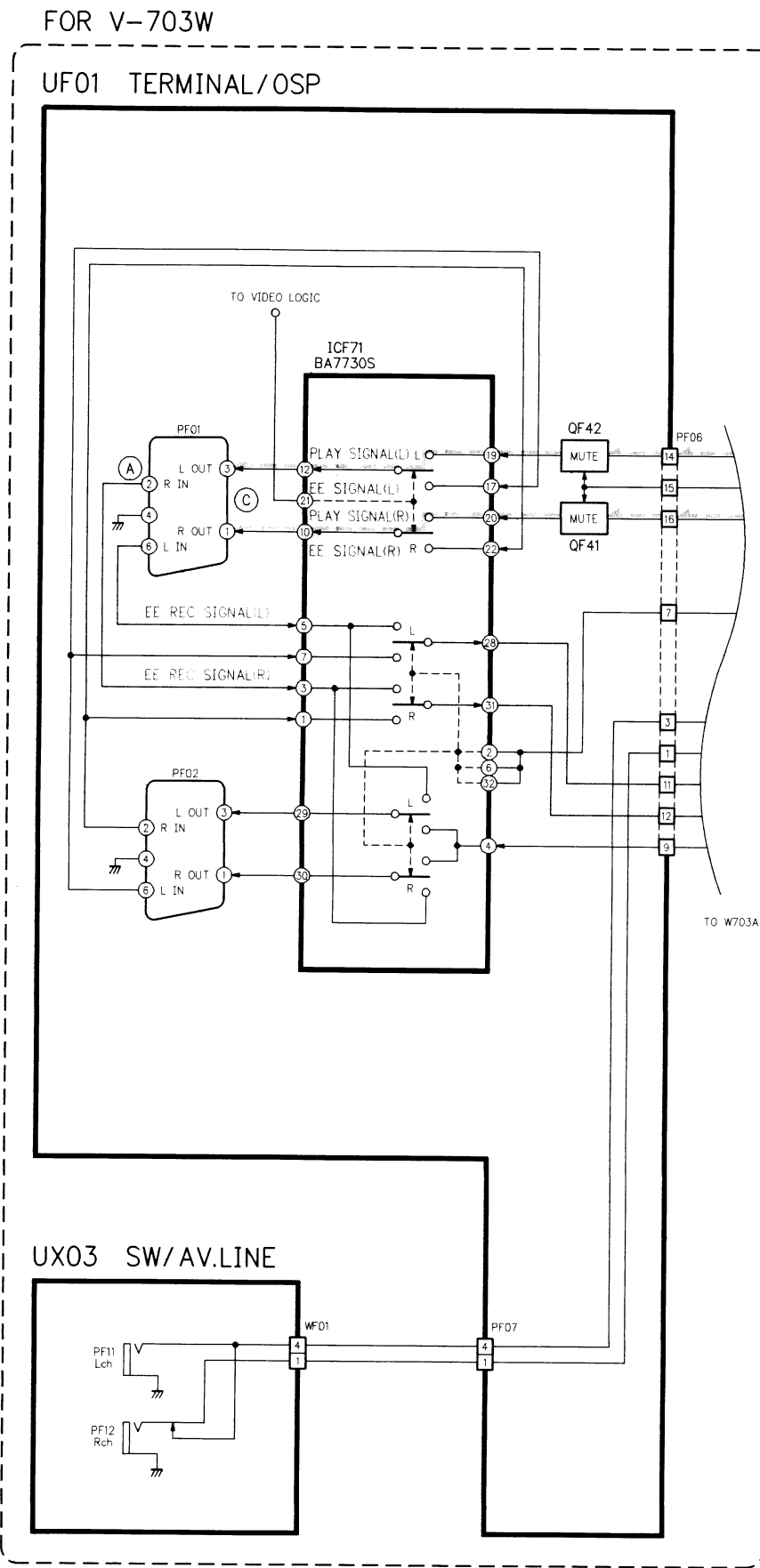
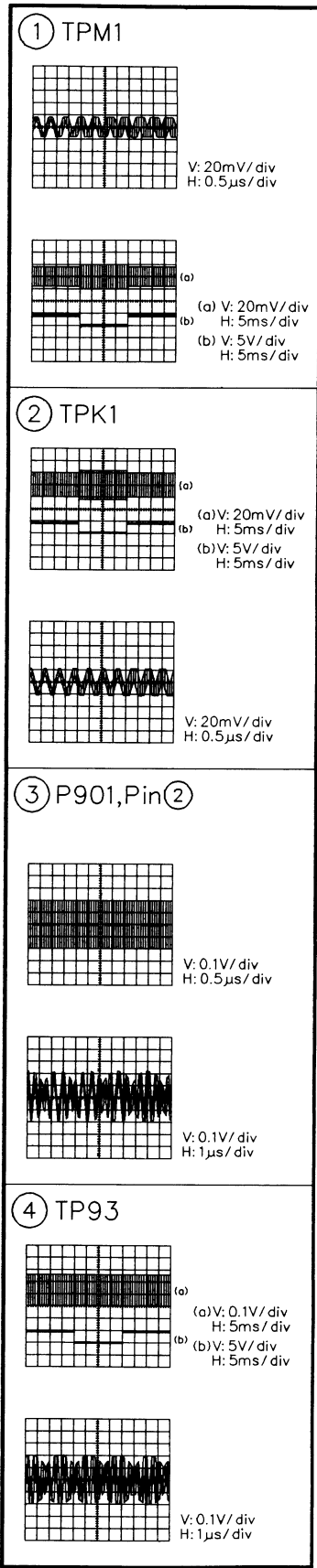
Video Section (V-703G/T/W)

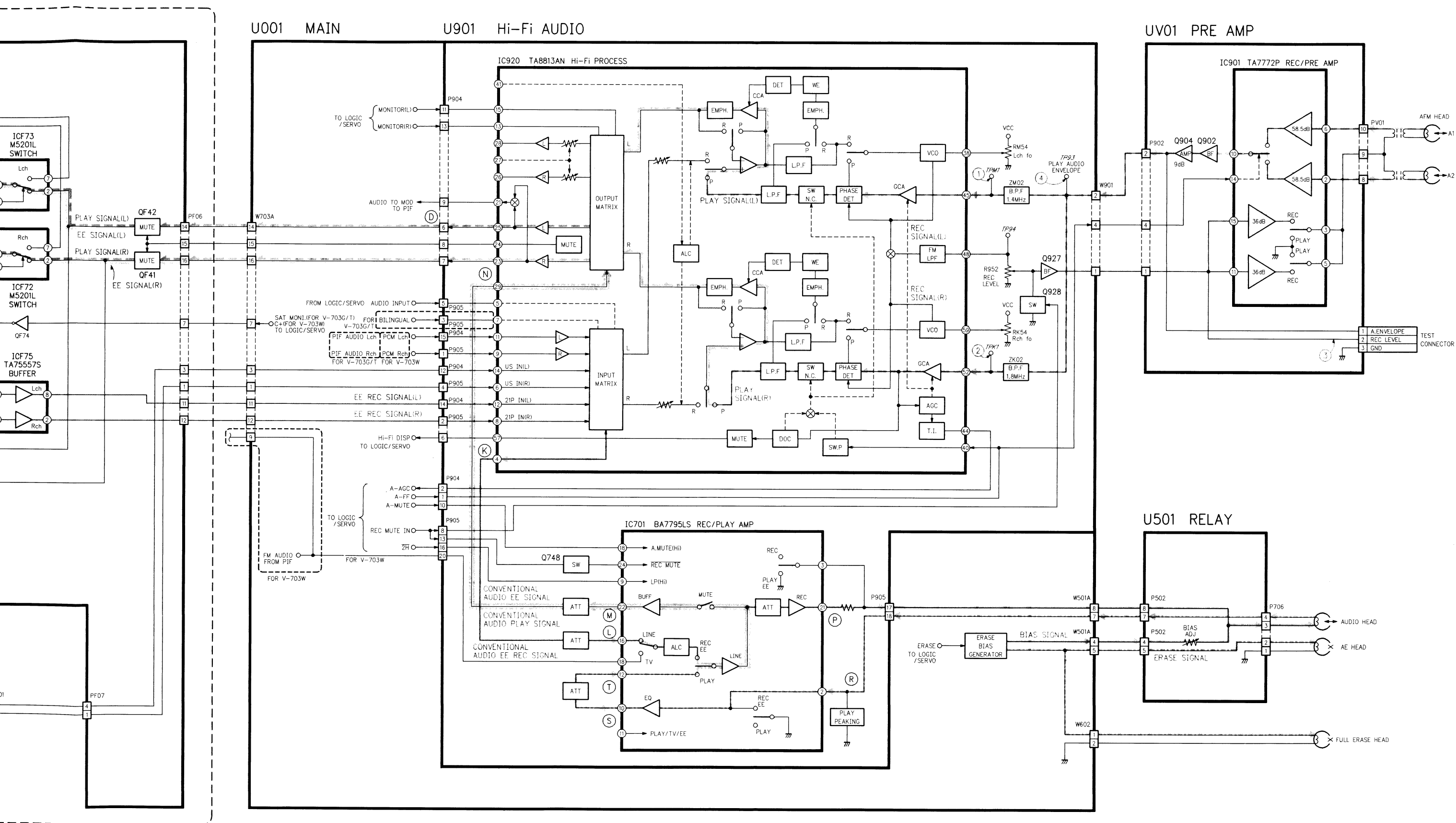




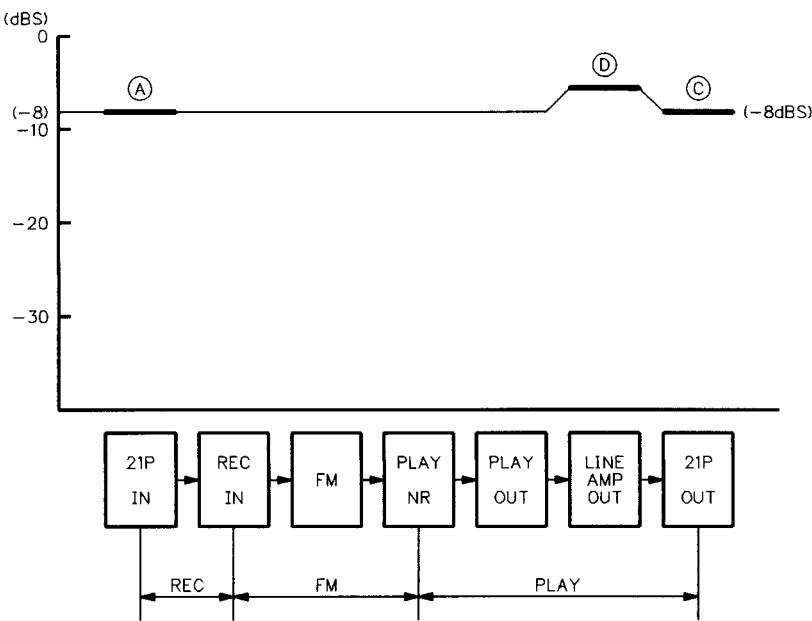


7-6. Audio Block Diagram

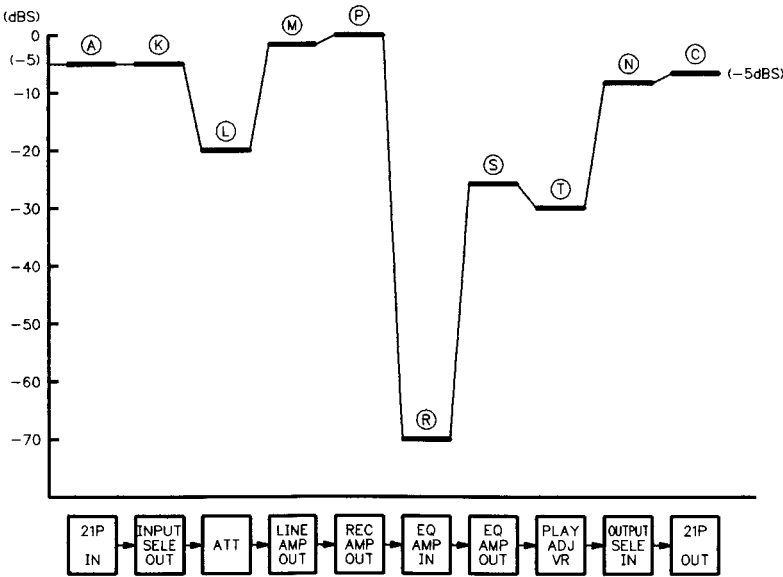




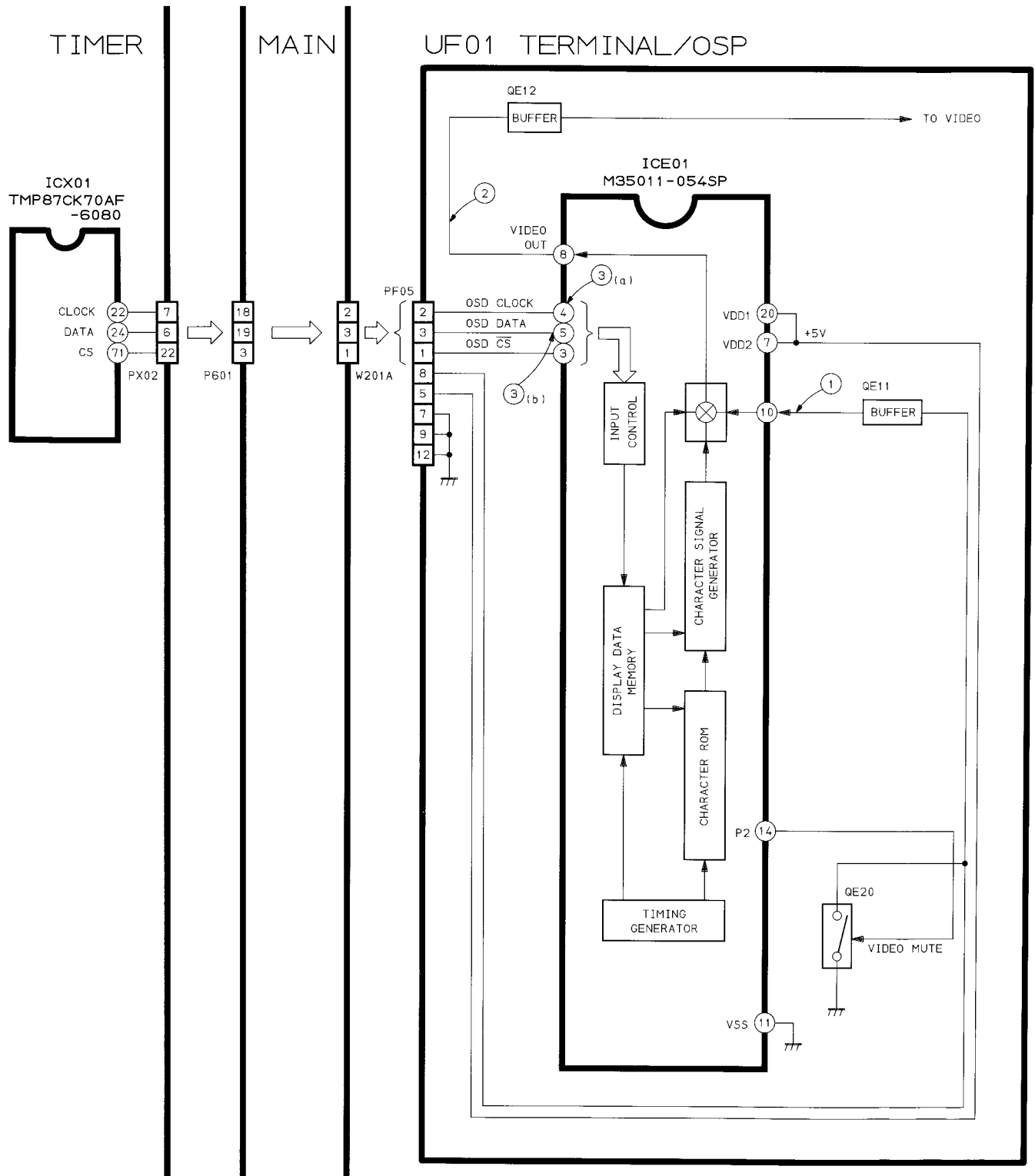
Hi-Fi Audio Level Chart



Conventional Audio Level Chart

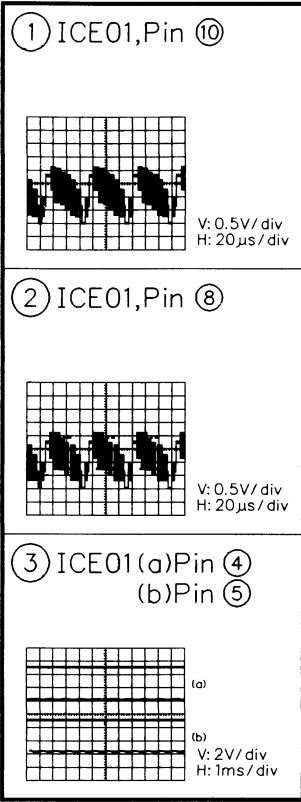
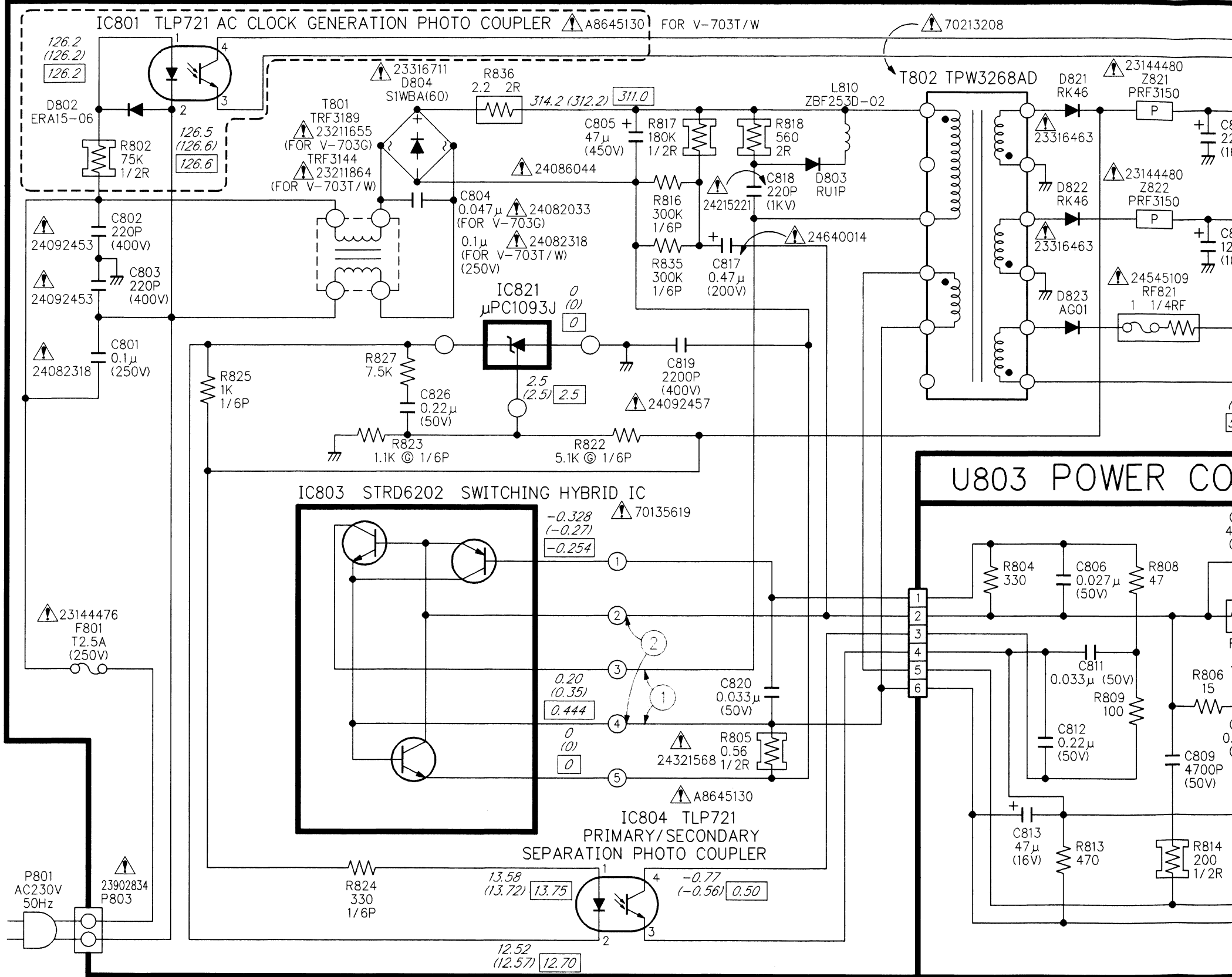


## 7-7. OSP Block Diagram



8. Circuit Diagrams  
8-1. Power Supply Circuit Diagram

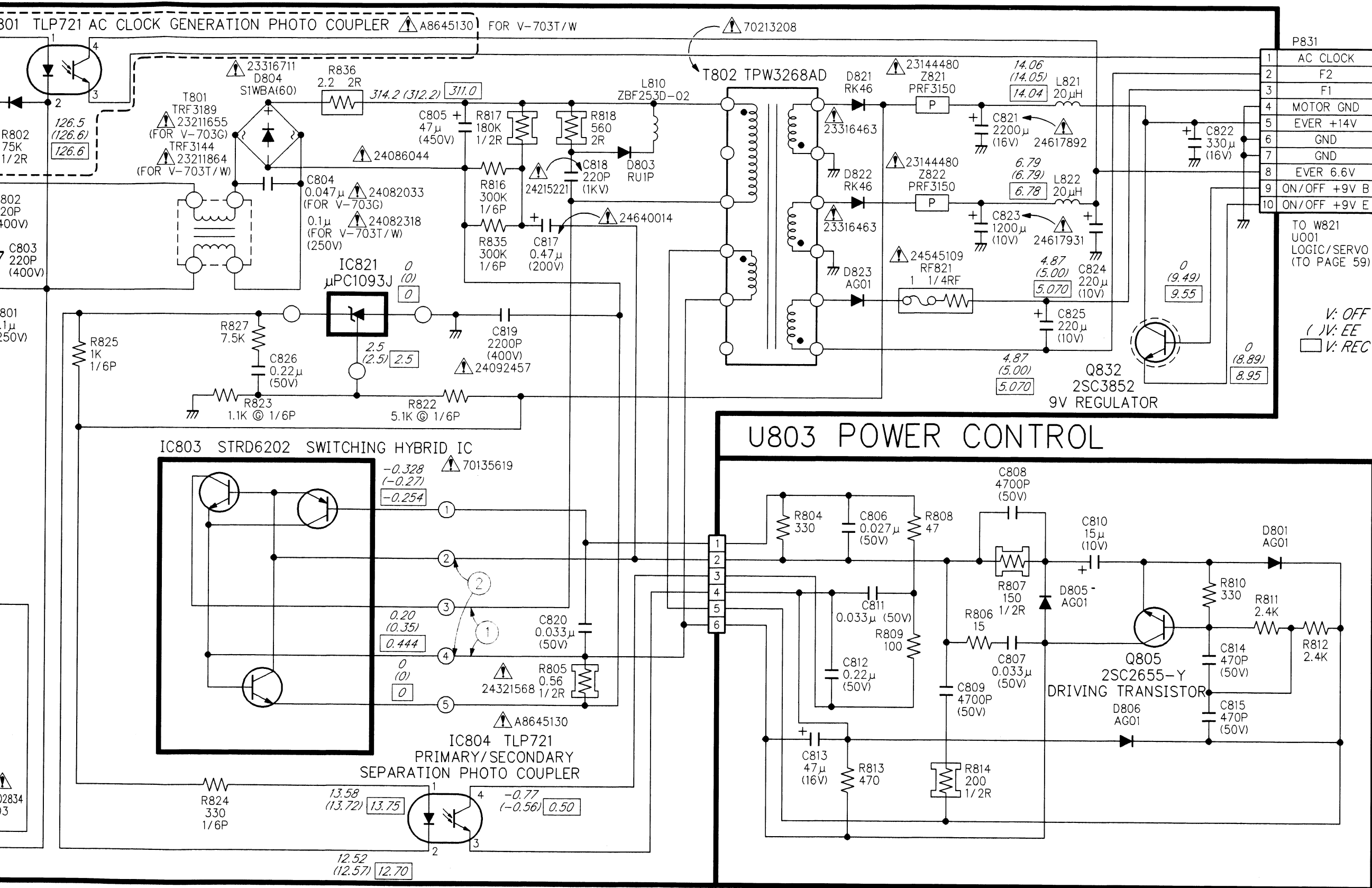
U802 POWER



## Diagrams

### Supply Circuit Diagram

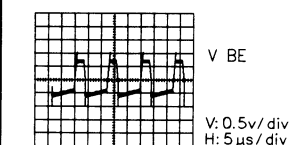
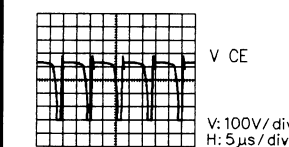
## POWER



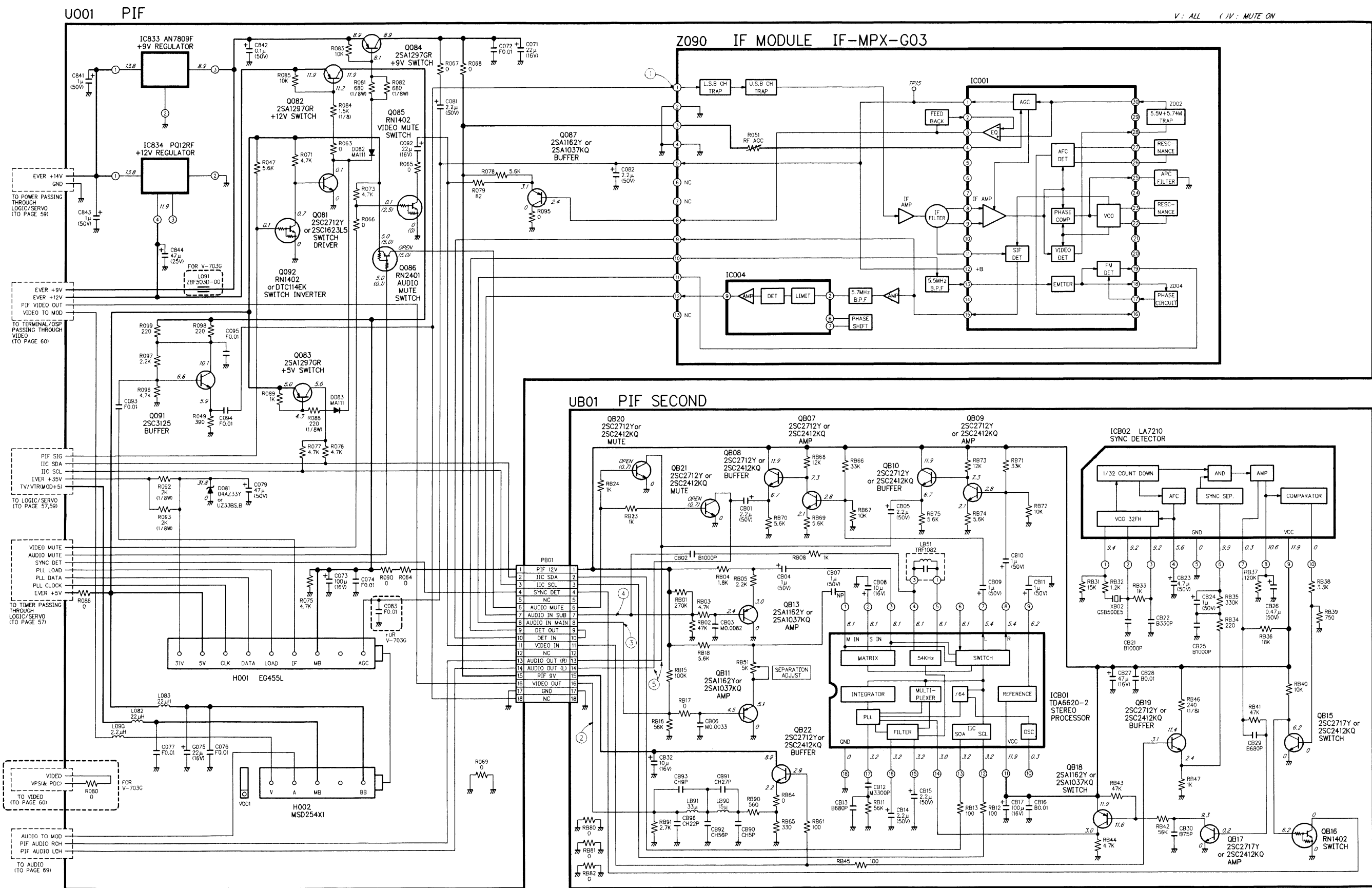
P831
AC CLOCK
F2
F1
MOTOR GND
EVER +14V
GND
GND
EVER 6.6V
ON/OFF +9V B
ON/OFF +9V E

TO W821  
U001  
LOGIC/SERVO  
(TO PAGE 59)

V: OFF  
( ) V: EE  
☐ V: REC

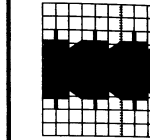


## 8-2. PIF Circuit Diagram (V-703G/T)

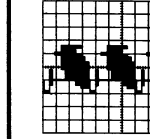


(V-703G/T

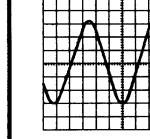
- ① Z090.



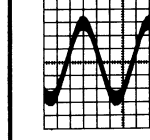
- ② PB01,



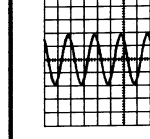
- ③ PB01,



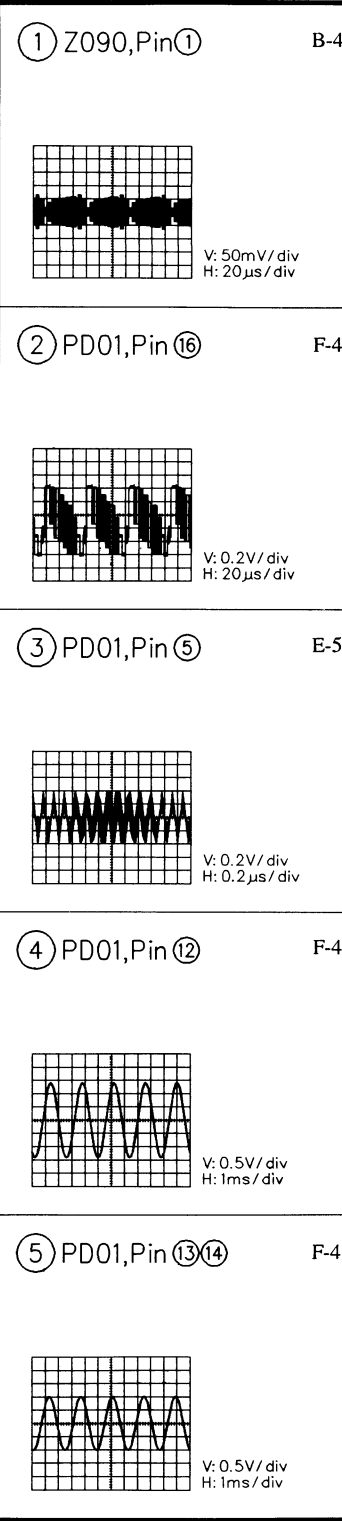
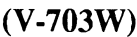
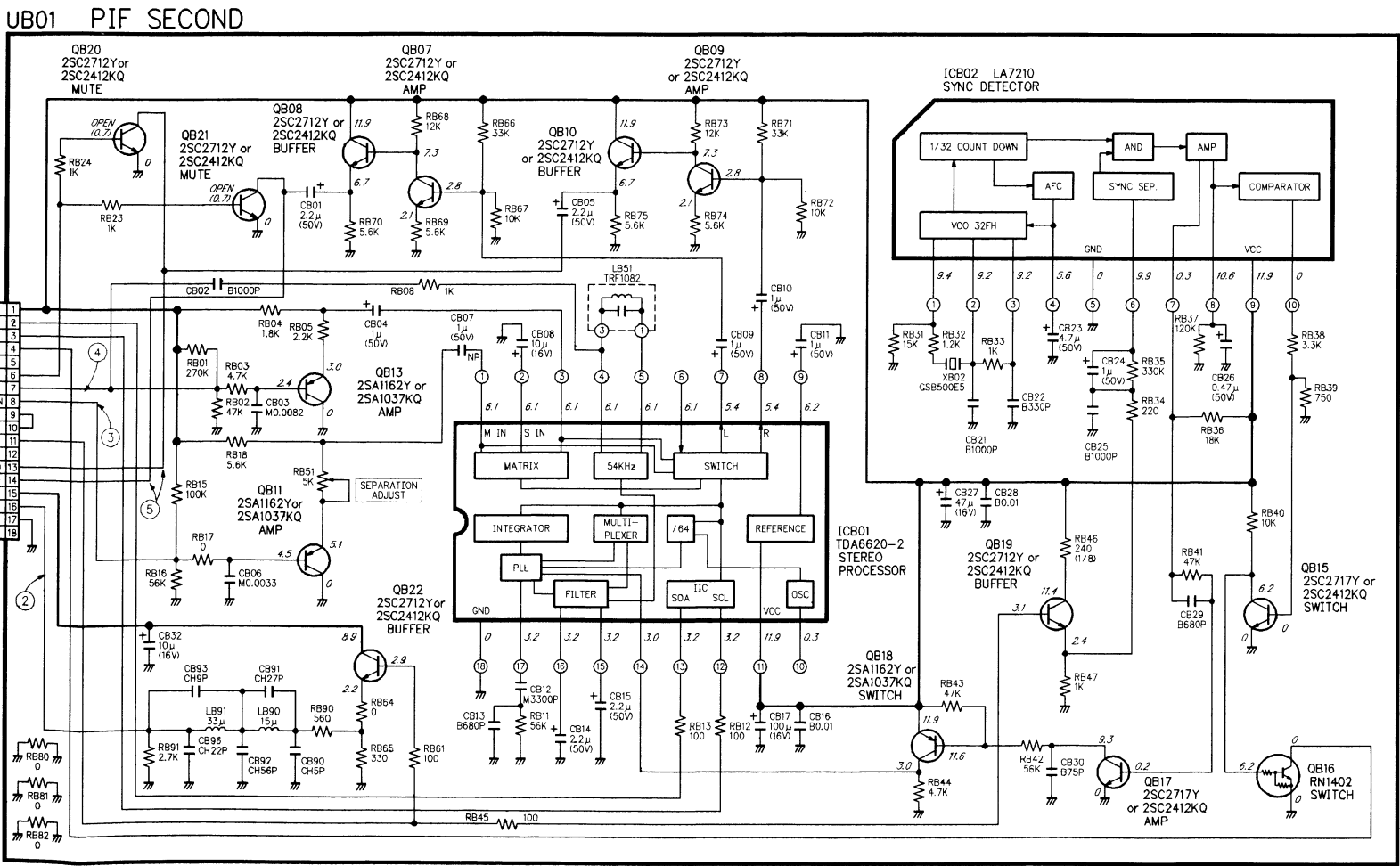
- ④ PB01,



- ⑤ PB01,







**A**

# B

**C**

D

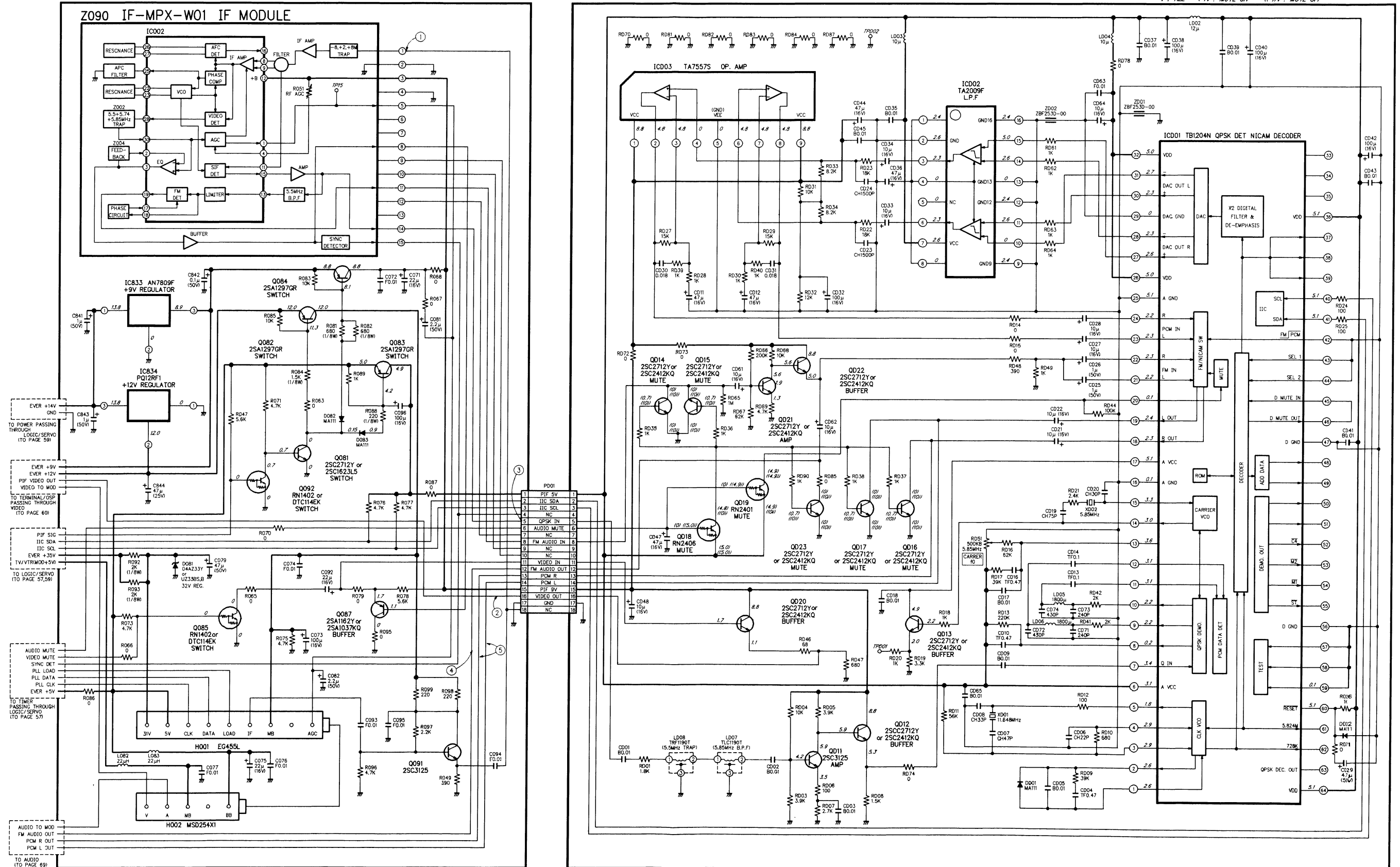
## E

**F**

## G

U001 PIF

UD01 NICAM



8-3. Timer Circuit Diagram

A

B

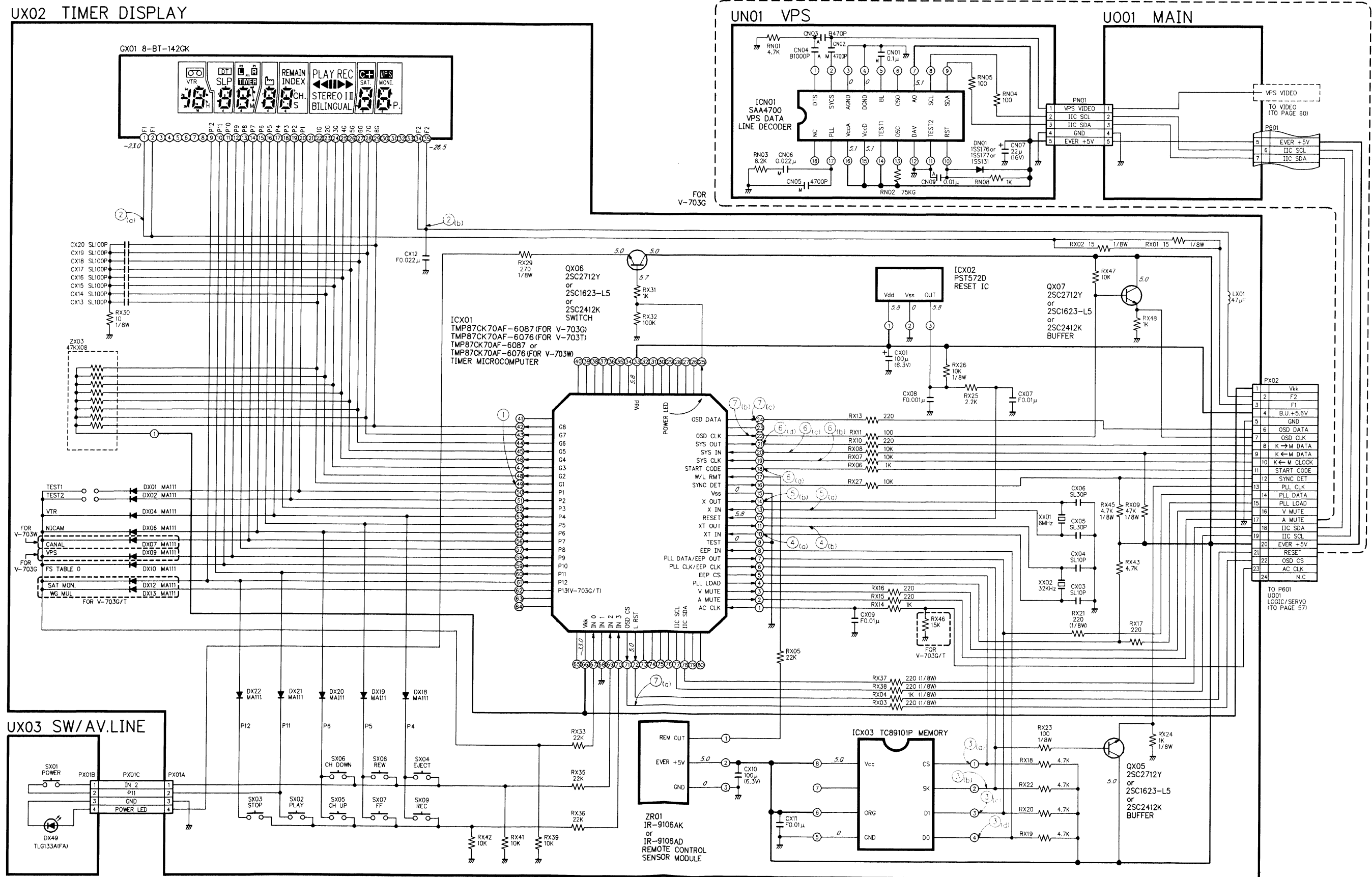
C

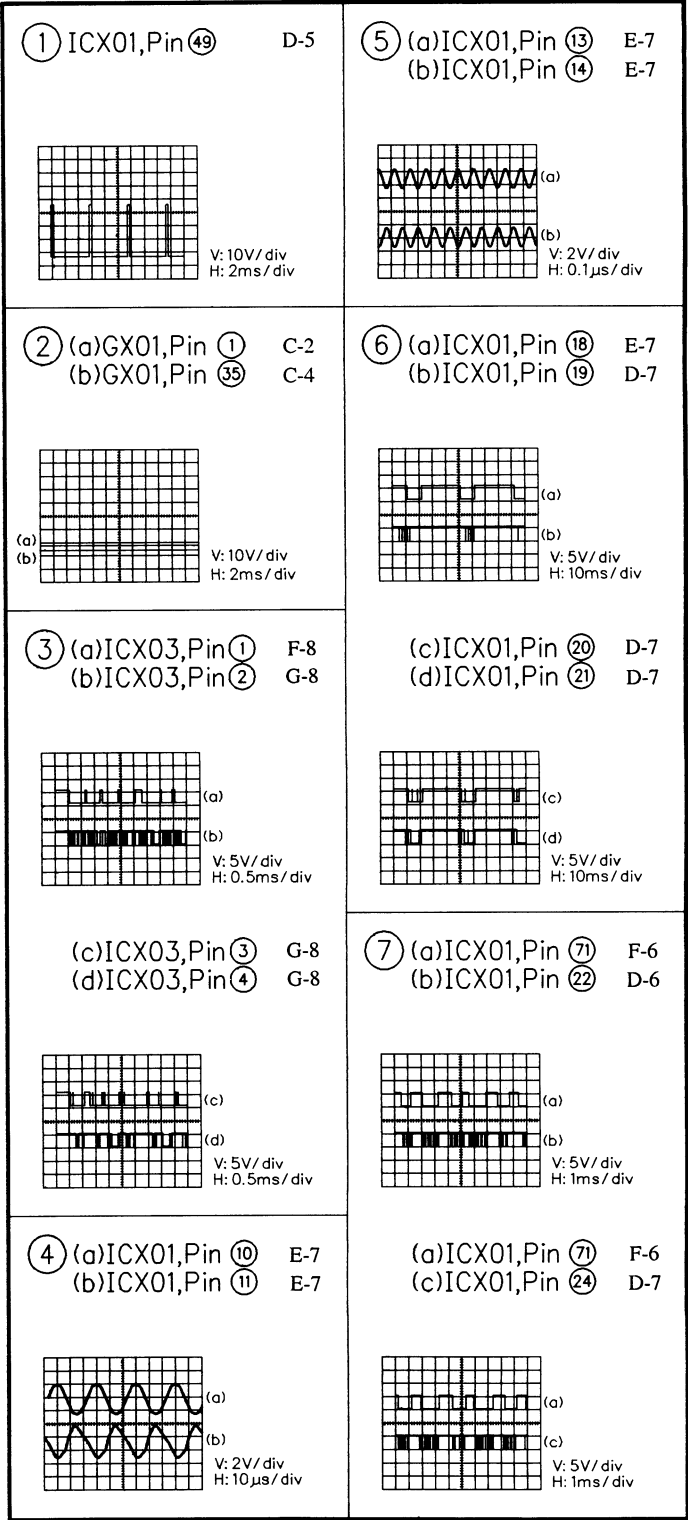
D

E

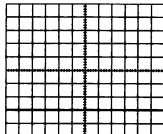
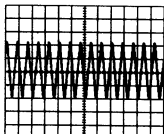
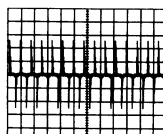
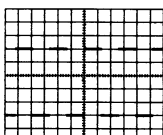
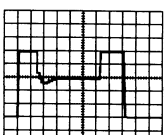
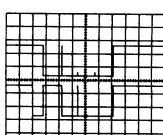
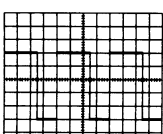
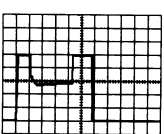
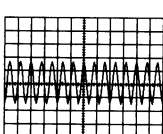
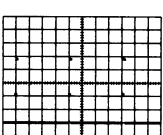
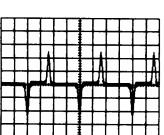
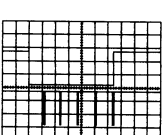
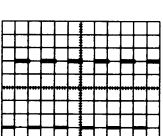
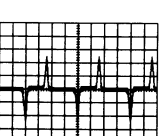
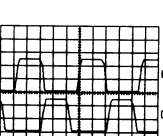
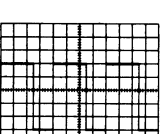
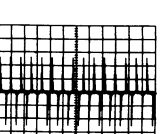
F

G





## 8-4. Logic/Servo Circuit Diagram

<p>① IC501, Pin ⑦ D-4</p>  <p>C SYNC</p> <p>V: 1.0V/div H: 5ms/div</p>	<p>⑦ IC501, Pin ② D-5</p>  <p>V: 1.0V/div H: 0.1μs/div</p>	<p>⑬ IC503, Pin ⑤ C-10</p>  <p>LP CUEx5</p> <p>V: 0.2V/div H: 10ms/div</p>
<p>② IC501, Pin ⑨ C-5</p>  <p>SP PLAY</p> <p>V: 1V/div H: 0.5ms/div</p>	<p>⑧ W501A, Pin ⑭ B-11</p>  <p>SLOW SP</p> <p>V: 1.0V/div H: 10ms/div</p>	<p>⑭ (a) IC501, Pin ⑤③ E-7 (b) IC501, Pin ⑤④ E-7</p>  <p>V: 2V/div H: 2ms/div</p>
<p>③ IC501, Pin ⑧ D-4</p>  <p>SP PLAY</p> <p>V: 1V/div H: 10ms/div 5Vp-p</p>	<p>⑨ W501A, Pin ⑭ B-11</p>  <p>SLOW LP</p> <p>V: 1.0V/div H: 10ms/div</p>	<p>⑮ IC501, Pin ① C-5</p>  <p>V: 1.0V/div H: 0.1μs/div</p>
<p>④ P201, Pin ⑤ E-15</p>  <p>SP PLAY</p> <p>V: 1.0V/div H: 5ms/div</p>	<p>⑩ IC503, Pin ⑤ C-10</p>  <p>SP PLAY</p> <p>V: 0.2V/div H: 10ms/div</p>	<p>⑯ (a) IC501, Pin ②⑨ E-5 (b) IC501, Pin ②⑩ E-7</p>  <p>V: 2V/div H: 2ms/div</p>
<p>⑤ IC501, Pin ⑧⑨ C-6</p>  <p>SP PLAY</p> <p>V: 1.0V/div H: 10μs/div</p>	<p>⑪ IC503, Pin ⑤ C-10</p>  <p>LP PLAY</p> <p>V: 0.2V/div H: 10ms/div</p>	<p>⑰ (a) IC501, Pin ⑤ D-4 (b) IC501, Pin ⑩ D-3</p>  <p>LP PLAY</p> <p>(a) V: 2V/div H: 0.1s/div 5Vp-p</p>
<p>⑥ IC501, Pin ⑧④ C-6</p>  <p>SP REC REC CTL</p> <p>V: 1V/div H: 10ms/div 5Vp-p</p>	<p>⑫ IC503, Pin ⑤ C-10</p>  <p>SP CUEx5</p> <p>V: 0.2V/div H: 10ms/div</p>	

**A**

B

**C**

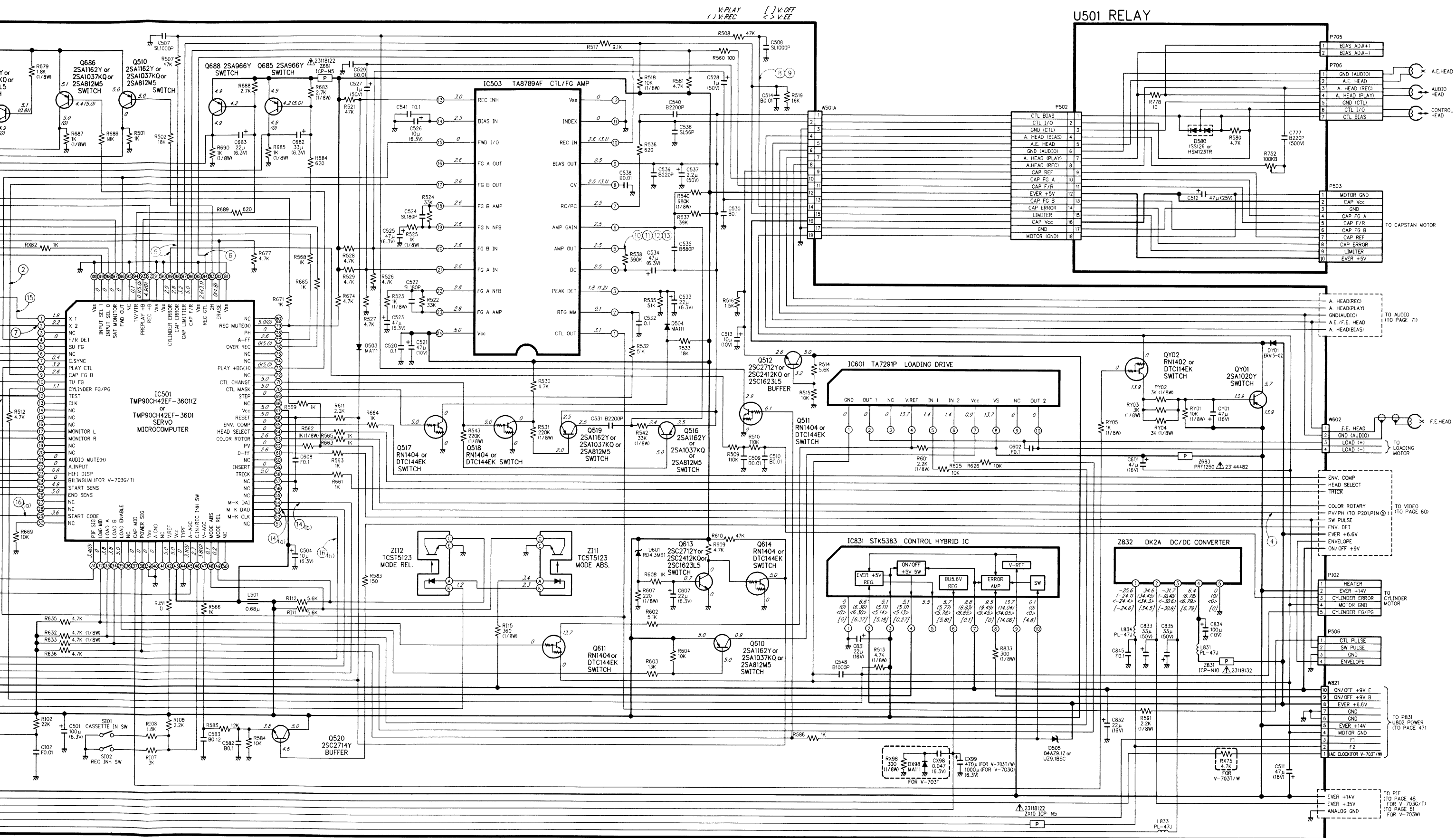
D

# E

**F**

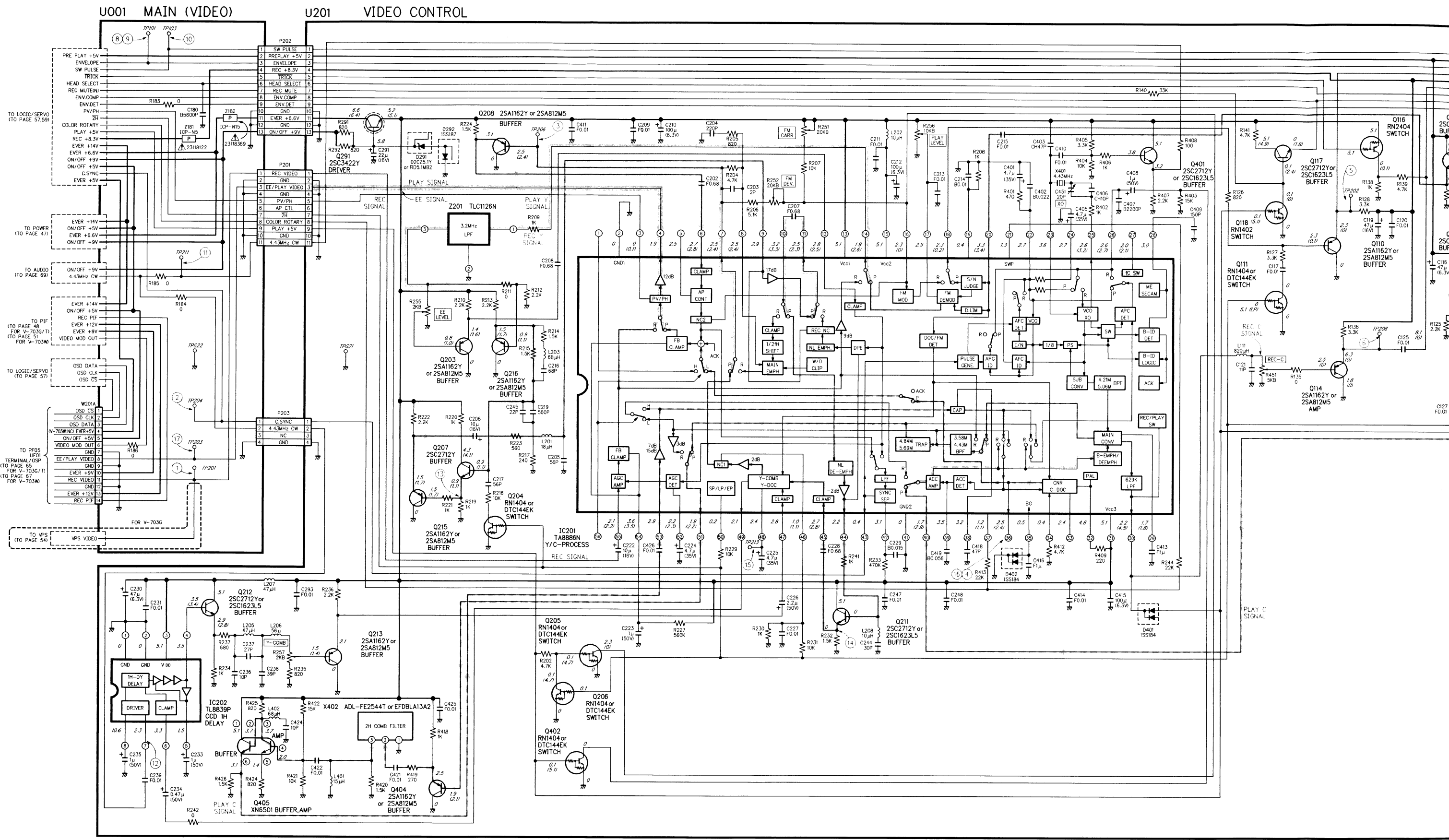
## G



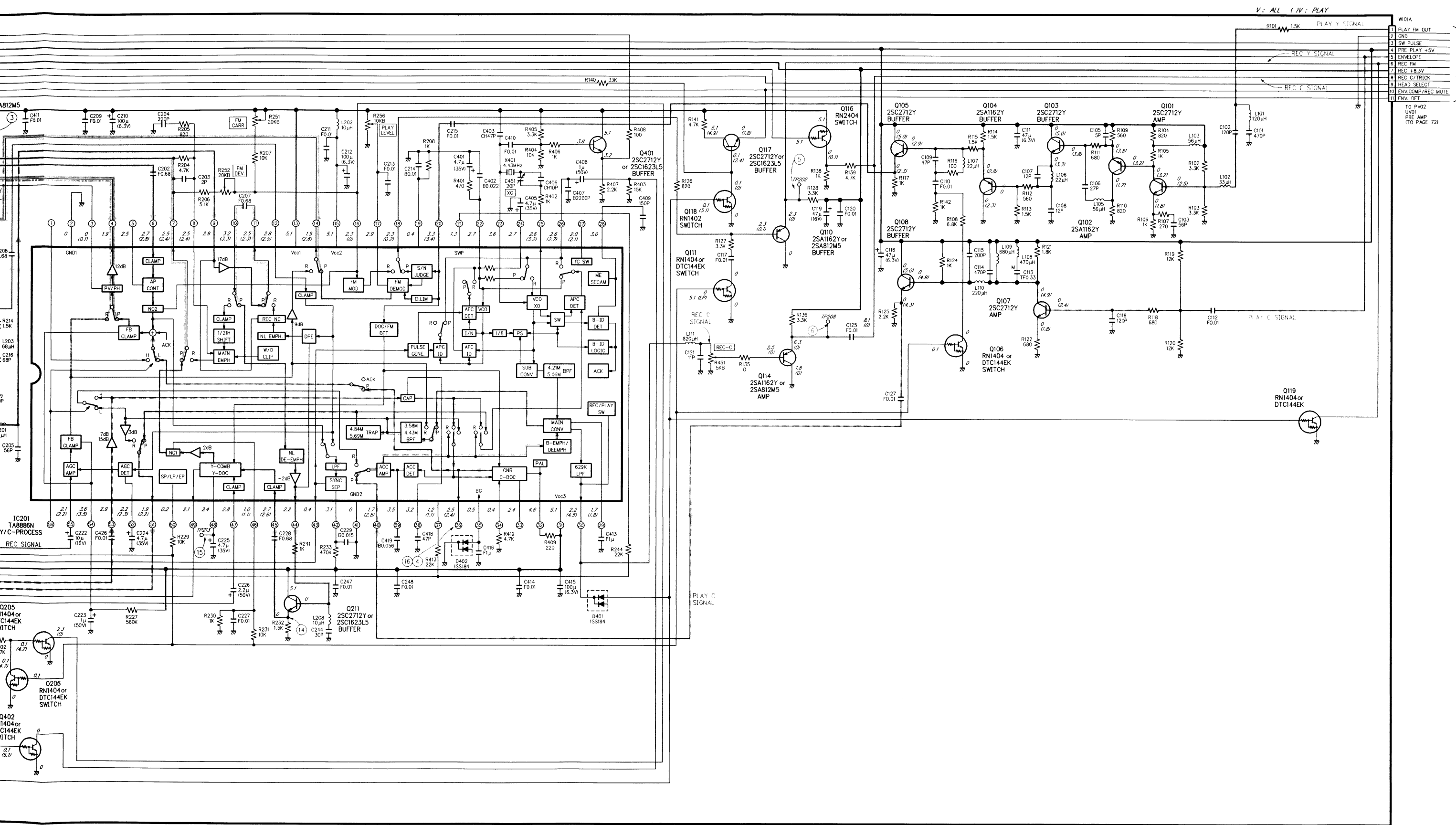


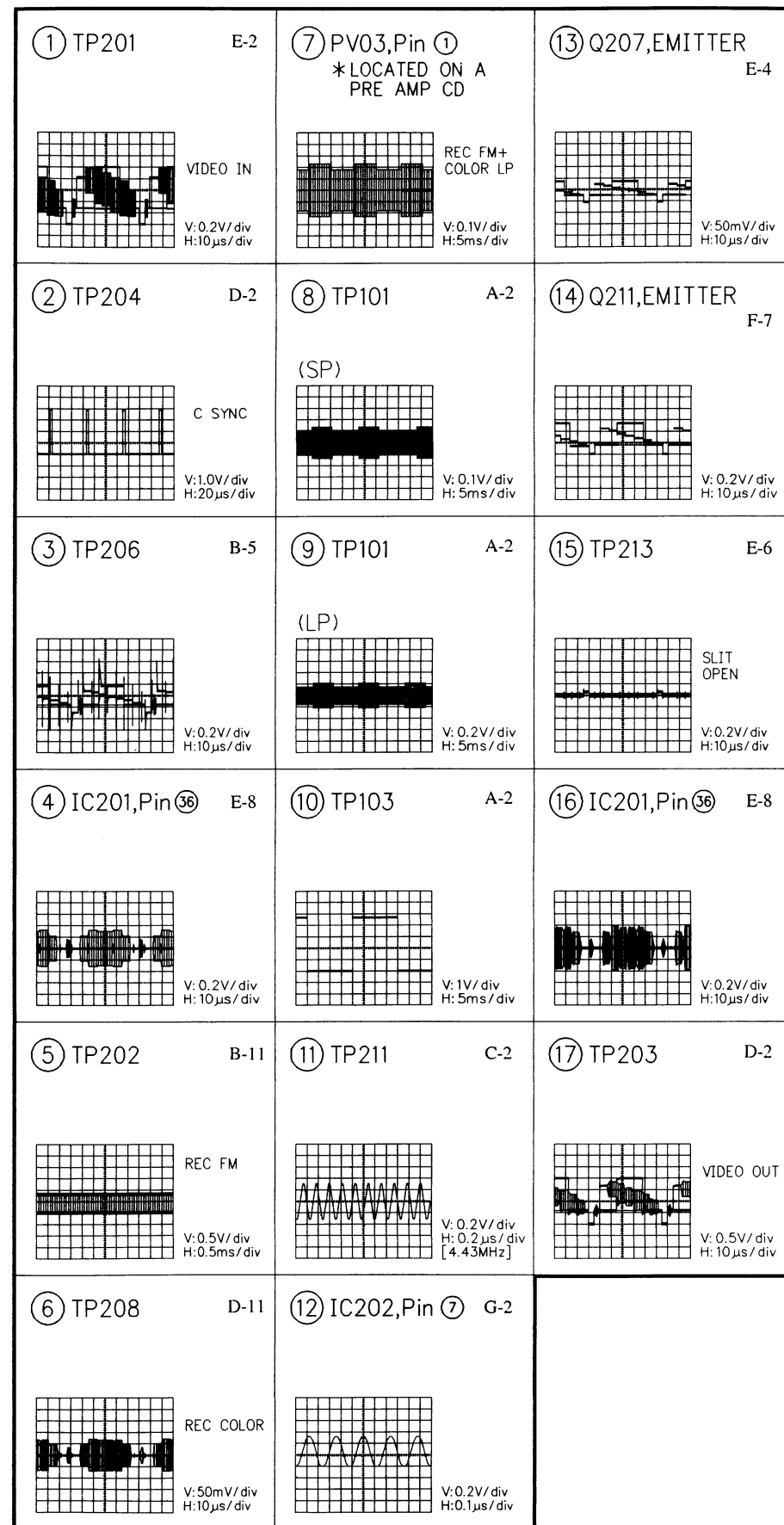


8-5. Video Circuit Diagram

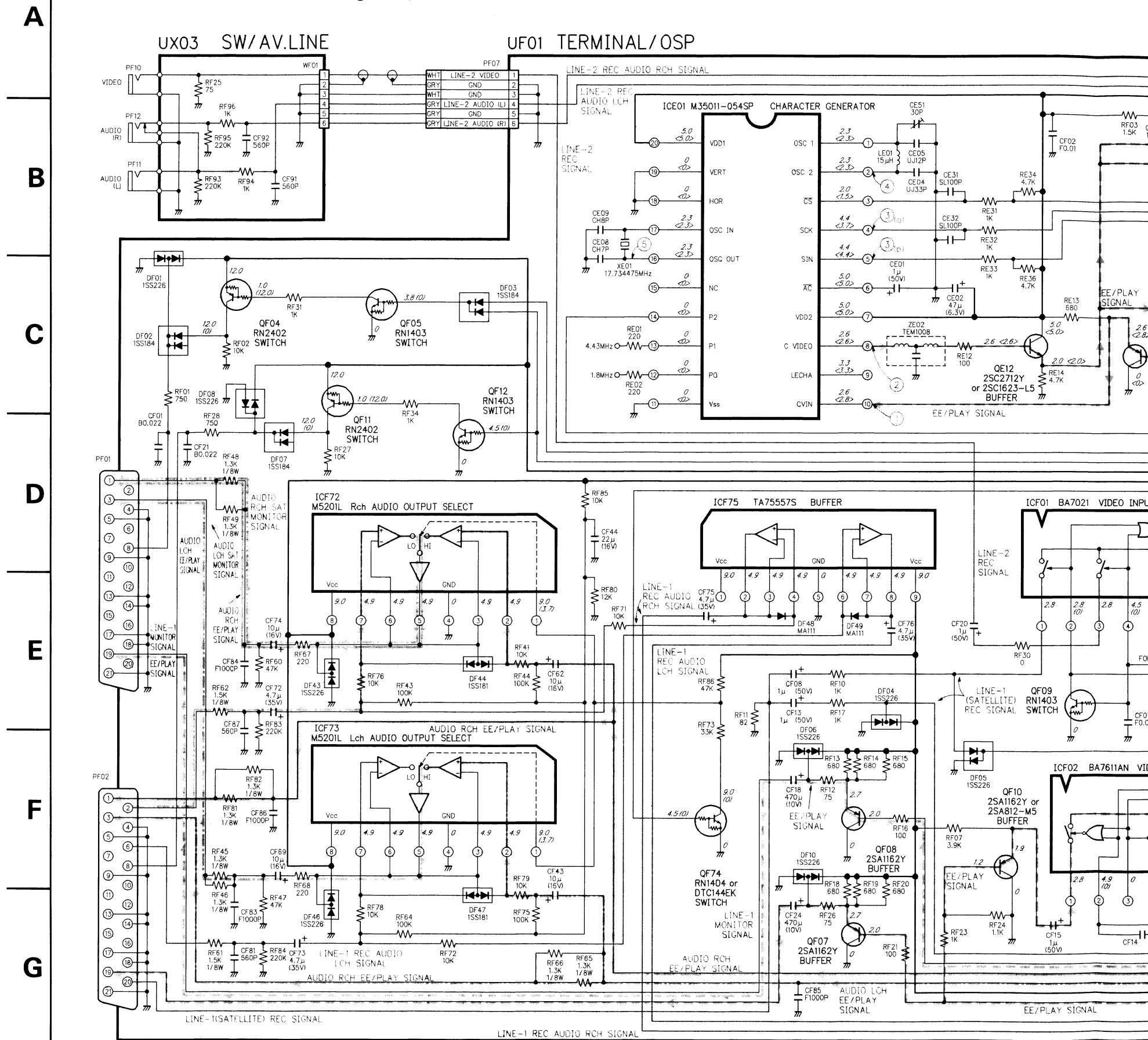






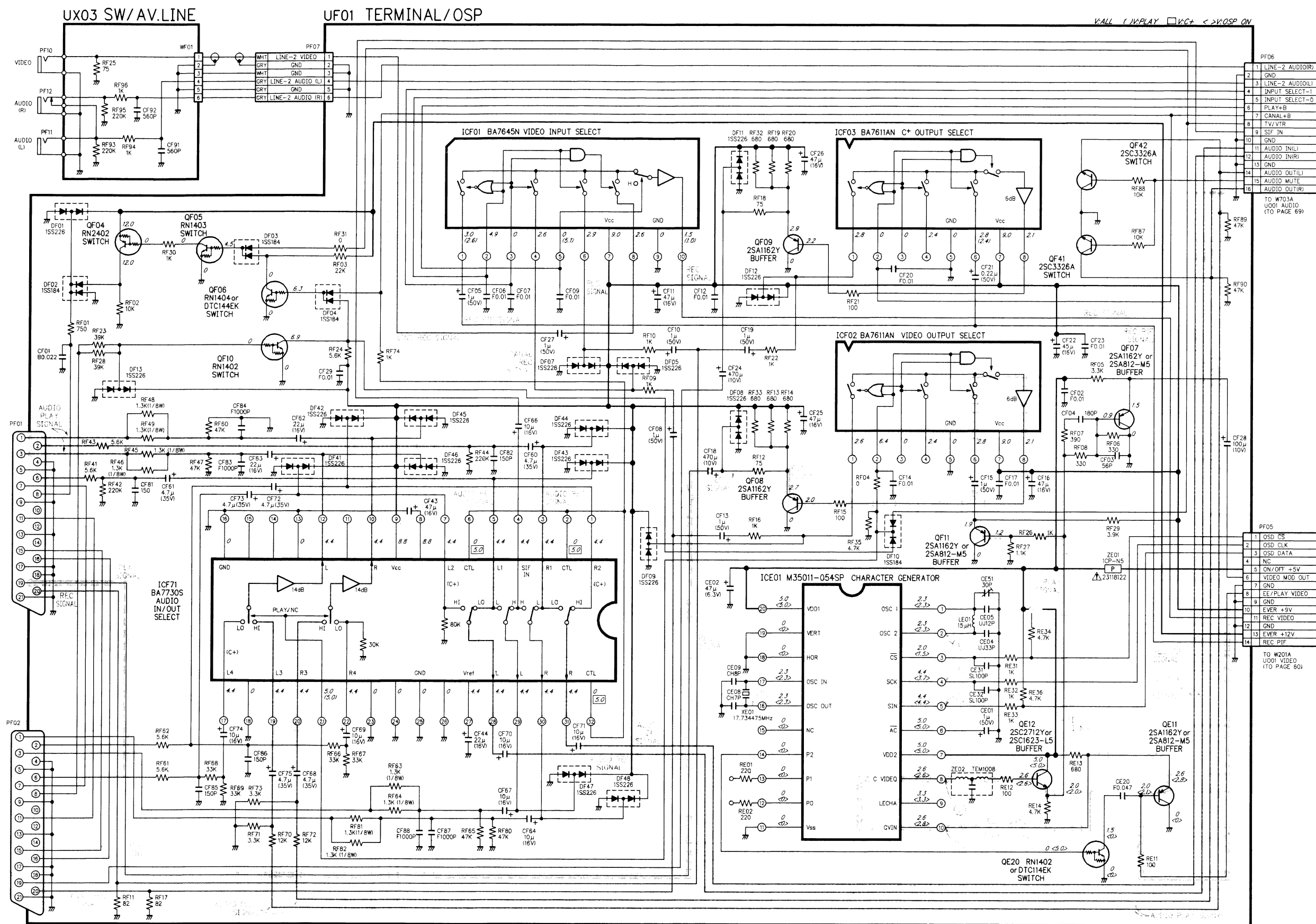


## 8-6. Terminal/OSP Circuit Diagram (V-703G/T)

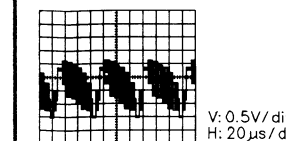




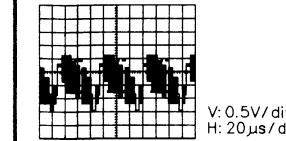
# Terminal/OSP Circuit Diagram (V-703W)



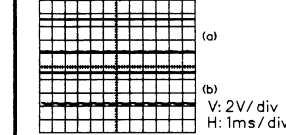
① ICE01  
Pin ⑩ G-8



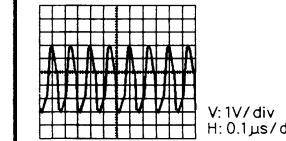
② ICE01  
Pin ⑧ G-8



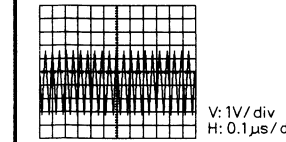
③ ICE01  
(a) Pin ④ F-8  
(b) Pin ⑤ F-8



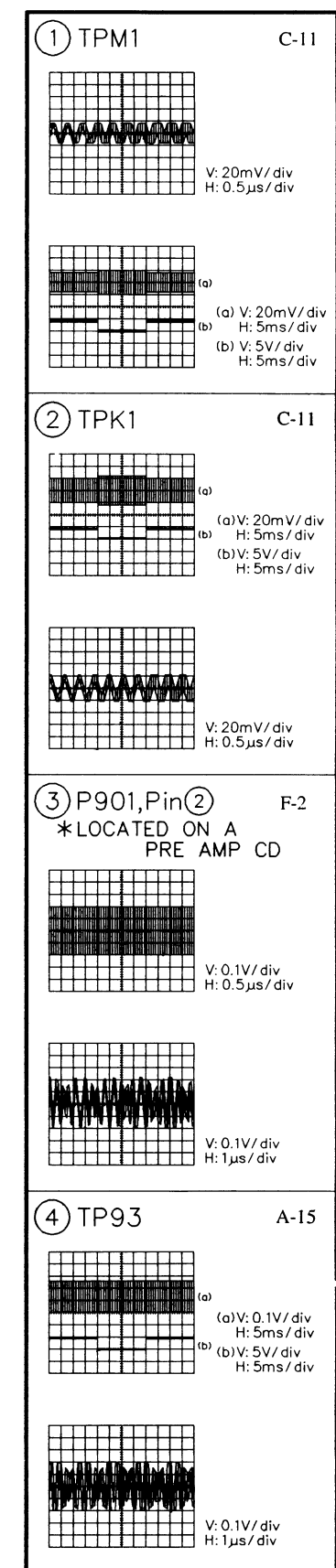
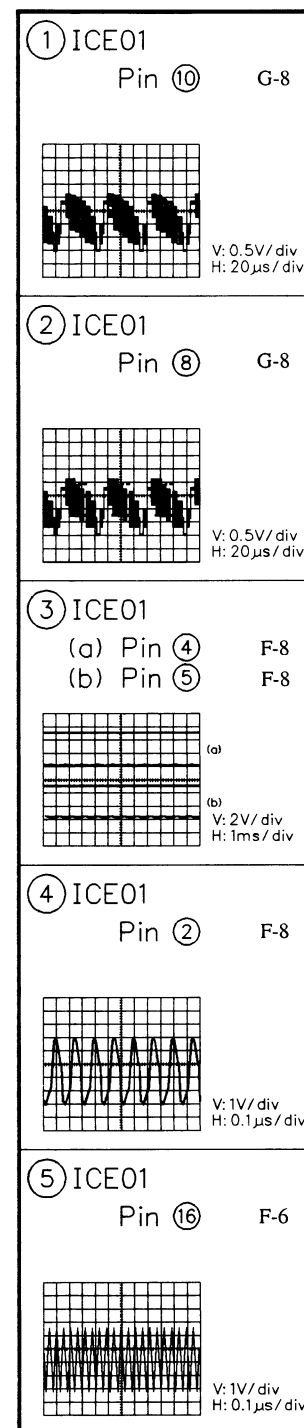
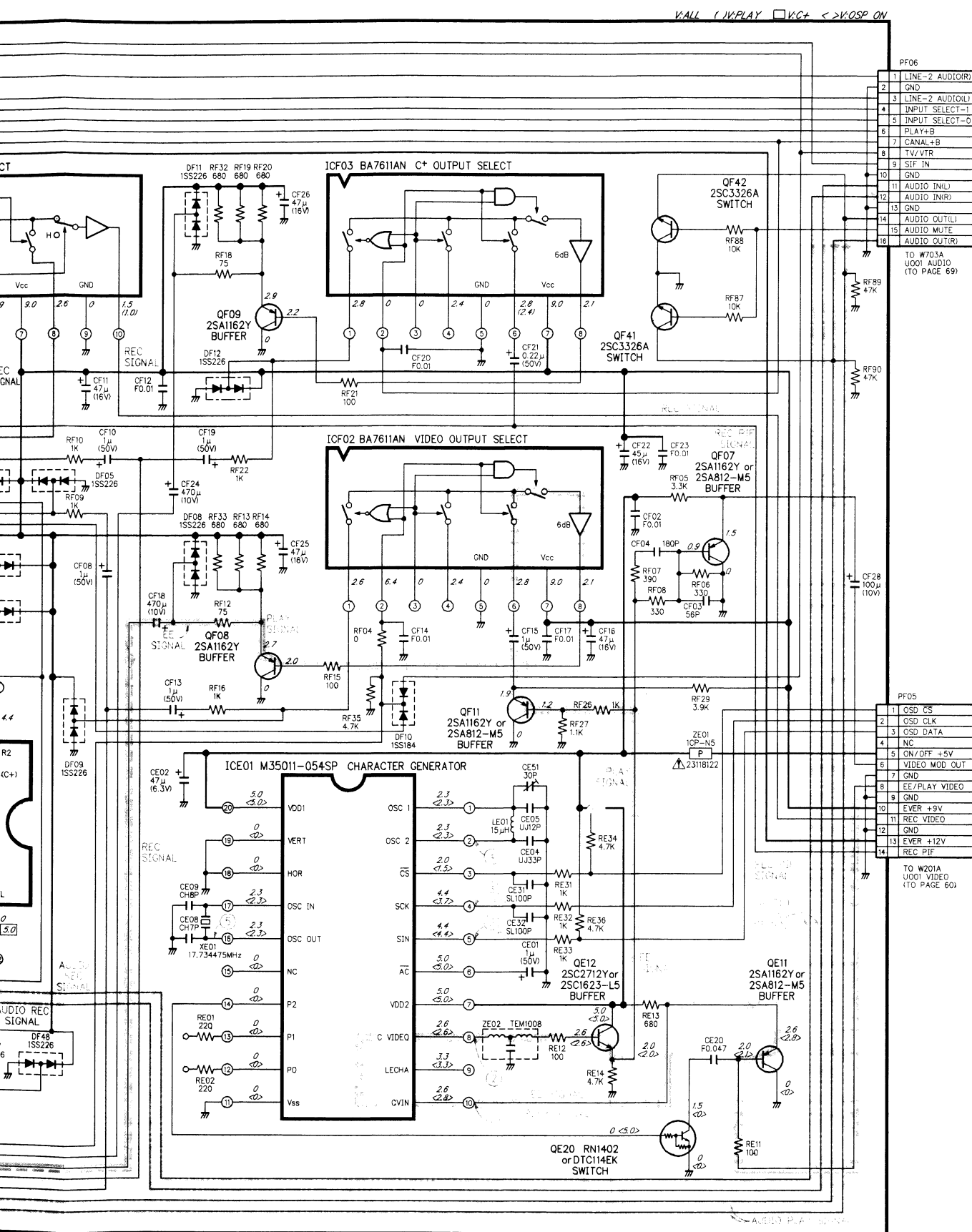
④ ICE01  
Pin ② F-8



⑤ ICE01  
Pin ⑩ F-6



### 8-7. Audio Circuit Diagram



**A**

# B

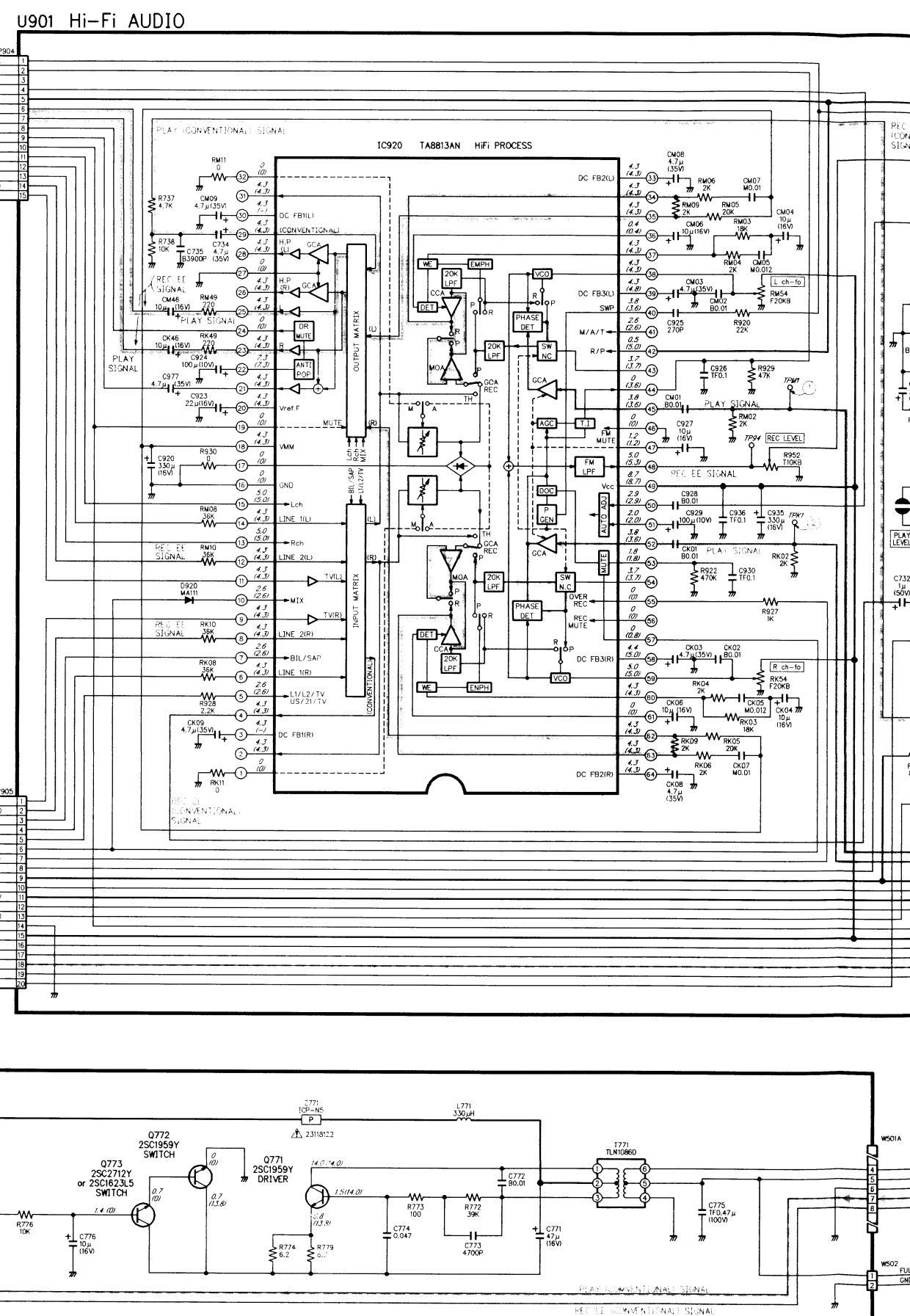
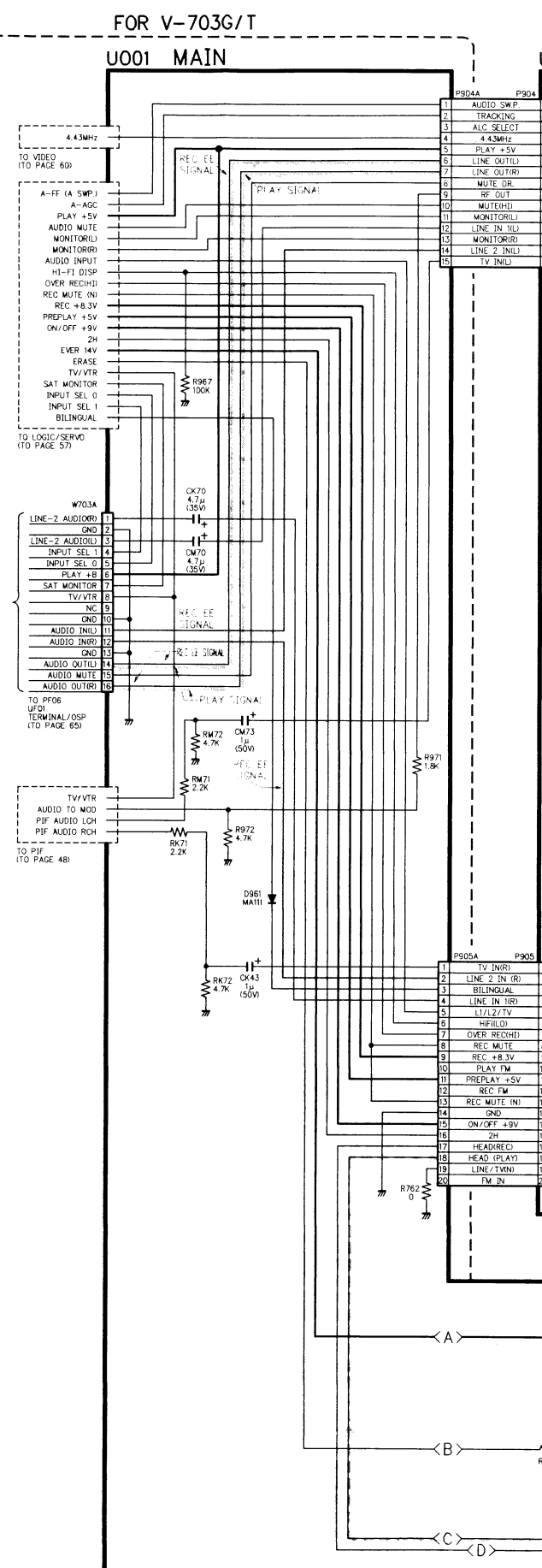
**C**

**D**

# E

**F**

# G



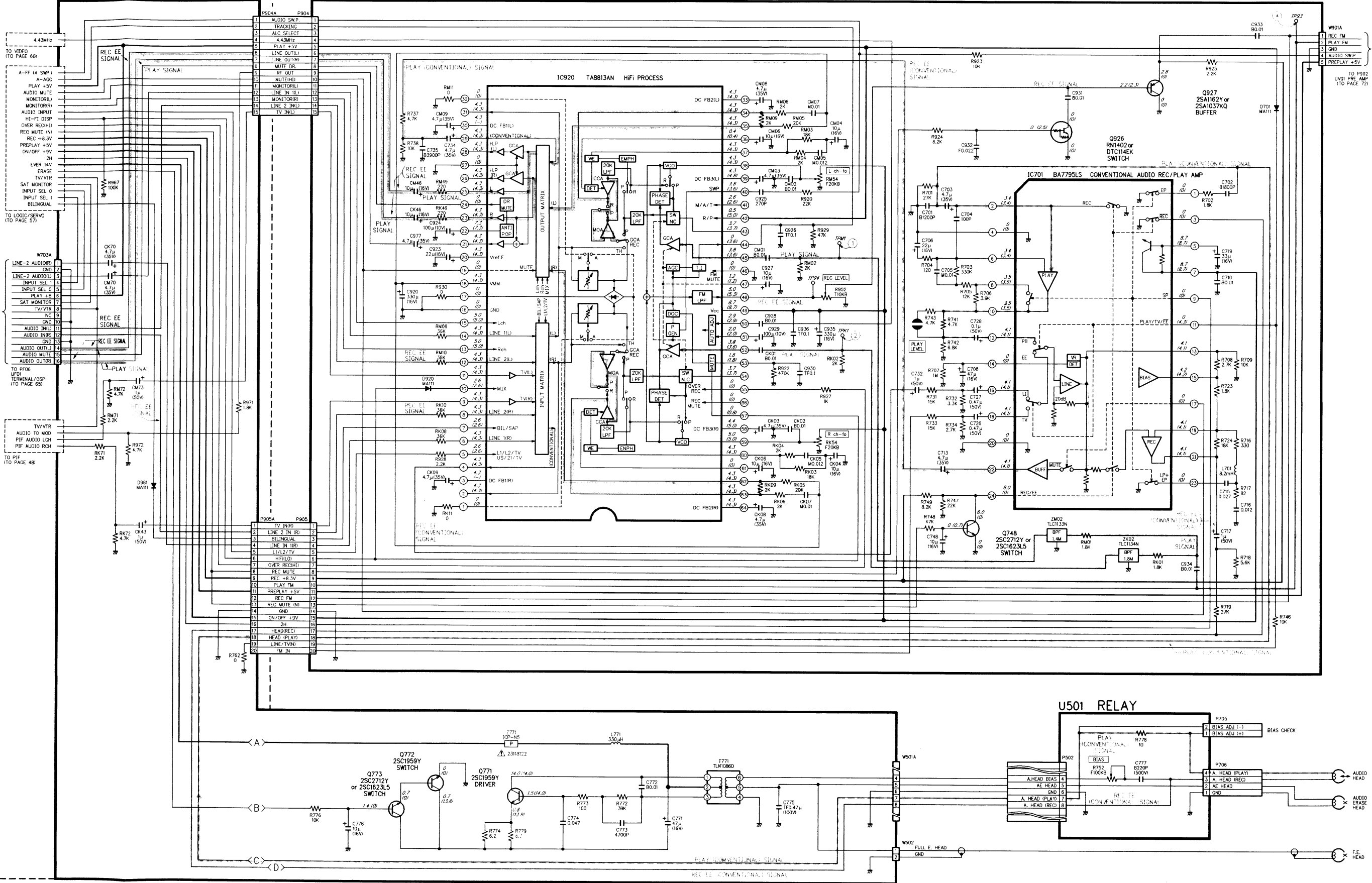


FOR V-703G/T

U001 MAIN

U901 Hi-Fi AUDIO

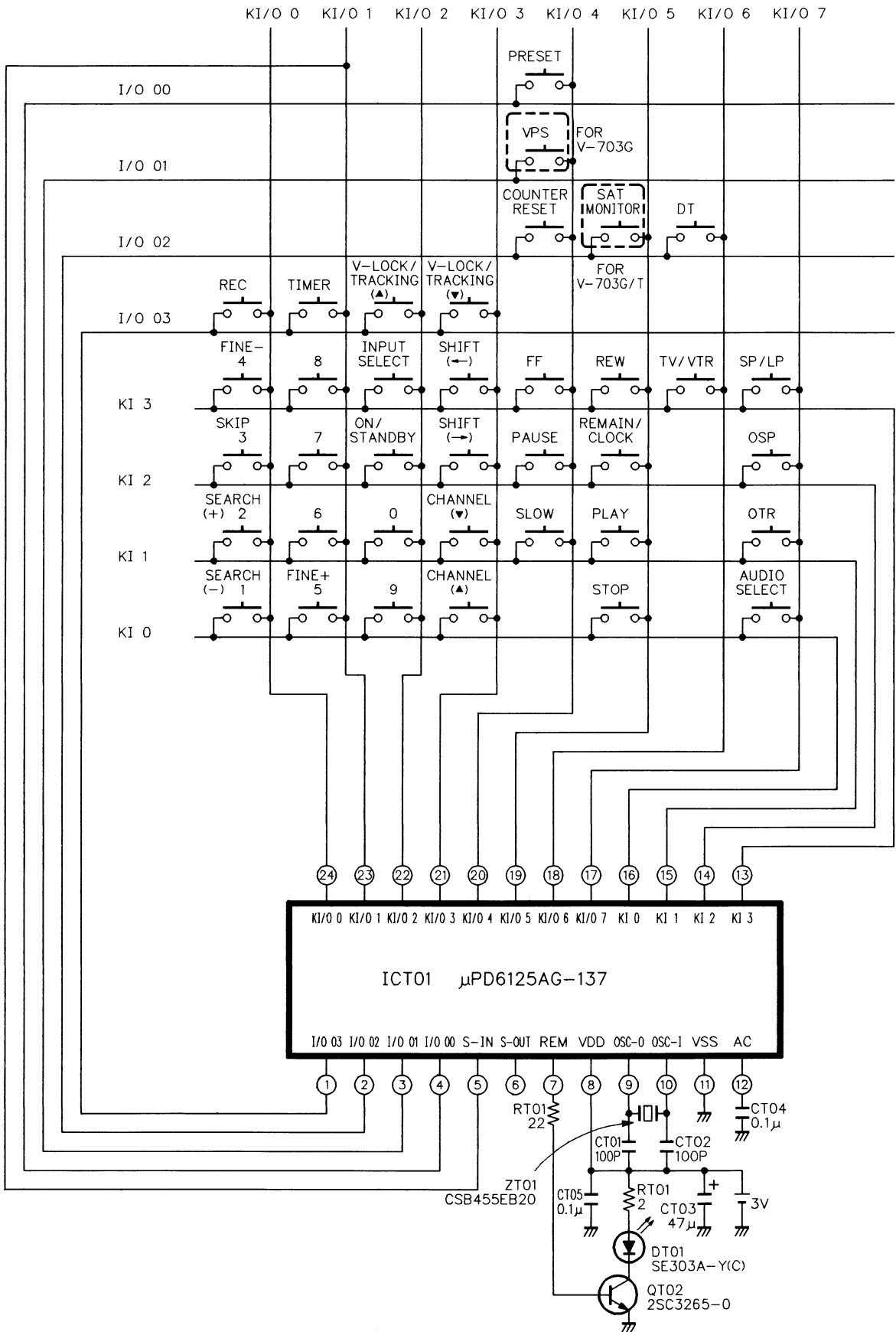
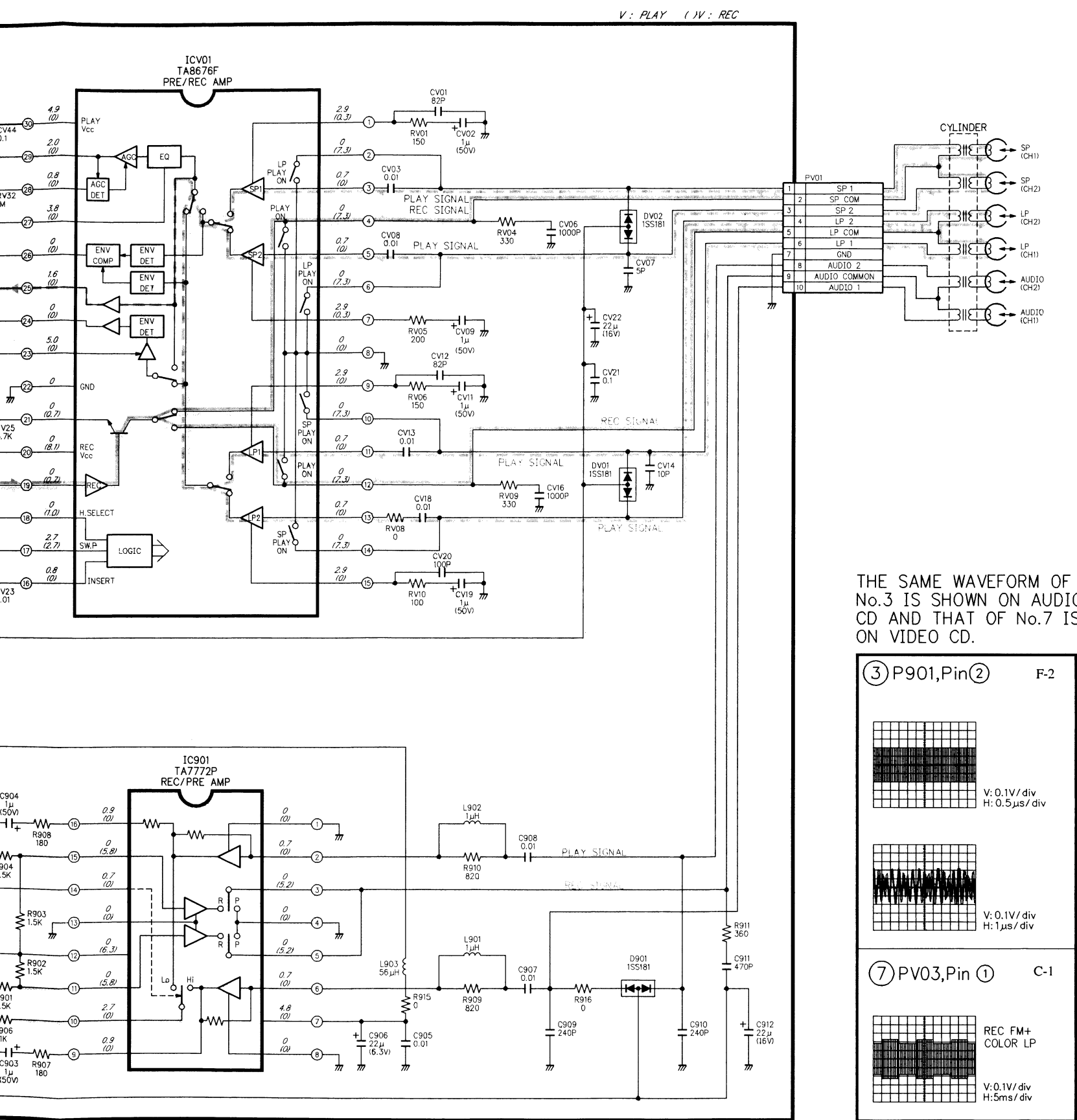
V-REC  
1/2 PLAY





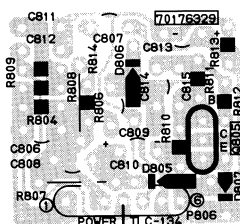
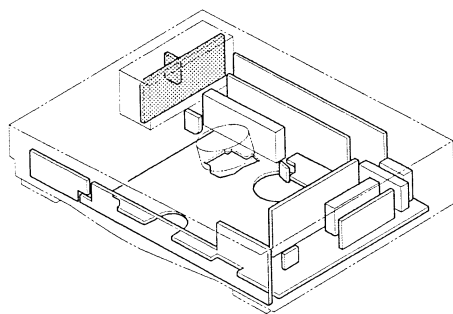


8-9. Remote Control Circuit Diagram



## 9. PC Boards

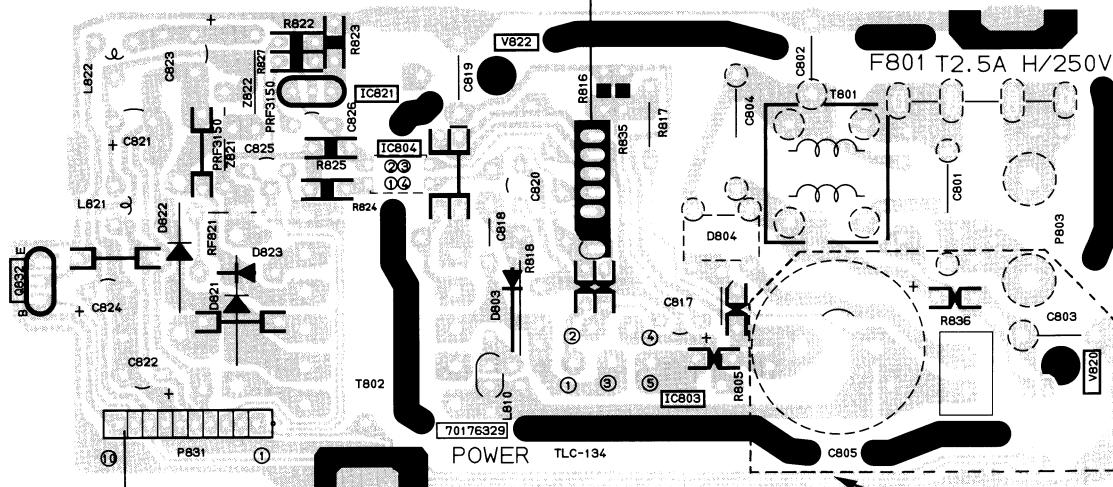
### 9-1. Power Supply PC Board and Power Control PC Board



U803

Power Control PC Board

P806



U802 Power PC Board

P831

10	-	1
----	---	---

→ To U001 Main PC Board, W821

Location of Diode (For V-703T/W)

Symbol No.	Location
D802	E-4

Location of Diodes

Symbol No.	Location
D801	-
D803	D-3
D804	D-4
D805	B-3
D806	A-3
D821	D-2
D822	D-2
D823	D-2

Location of ICs

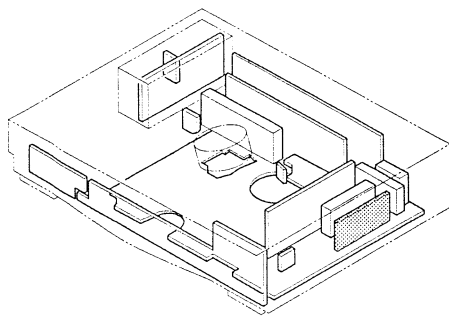
Symbol No.	Location
IC801	F-5
IC803	D-3
IC804	C-2
IC821	C-2

Voltage and Location of Transistors  
V: OFF, (V): EE, [V]: REC

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q805	-	-	-	B-4
Q832	0(8.89)[8.95]	-	0(9.49)[9.55]	D-1

shows differences between models.

9-2. PIF Second PC Board (V-703G/T)



Location of  
Adjusting Part

Symbol No.	Loca- tion
RB51	E-3

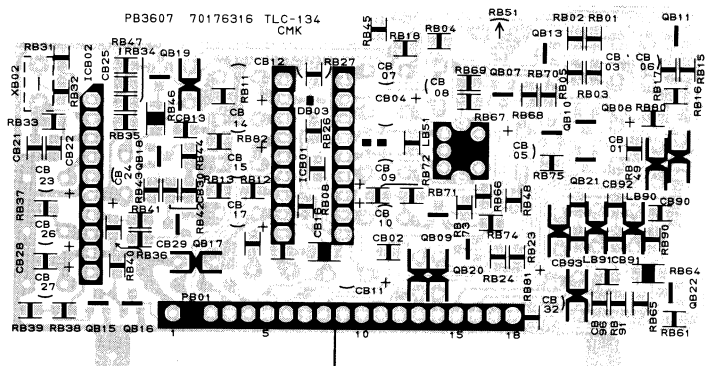
Location of  
ICs

Symbol No.	Loca- tion
ICB01	E-3
ICB02	E-2

Voltage and Location of Transistors  
V: ALL, (V): MUTE ON

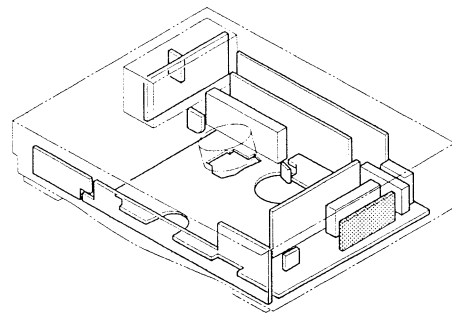
Symbol No.	Voltage (Unit:V)			Loca- tion
	E	C	B	
QB07	2.1	7.3	2.8	E-3
QB08	6.7	11.9	7.3	E-4
QB09	2.1	7.3	2.8	E-3
QB10	6.7	11.9	7.3	E-4
QB11	5.1	0	4.5	E-4
QB13	3.0	0	2.4	E-3
QB15	0	6.2	0	F-2
QB16	0	0	6.2	F-2
QB17	0	9.3	0.2	F-2
QB18	11.9	3.0	11.6	E-2
QB19	2.4	11.4	3.1	E-2
QB20	0	-	OPEN:0.7	F-3
QB21	0	-	OPEN:0.7	E-4
QB22	2.2	8.9	2.9	F-4

UB01 PIF Second PC Board



PB01  
1 - 18 → To U001 Main PC Board, PB01

### 9-3. NICAM PC Board (V-703W)



### Location of Diodes

Symbol No.	Location
DD01	E-4
DD02	E-3

### Location of Adjusting Part

Symbol No.	Location
RD51	D-4

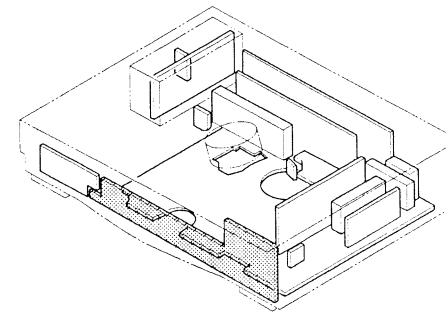
### Location of ICs

Symbol No.	Location
ICD01	D-3
ICD02	E-2
ICD03	E-2

**Voltage and Location of Transistors**  
**V: ALL, (V): MUTE ON, <V>: MUTE OFF**

Symbol No.	Voltage (Unit:V)			Loca- tion
	E	C	B	
QD11	3.5	5.9	4.2	E-4
QD12	5.3	8.8	5.9	F-4
QD13	2.0	4.9	2.2	E-3
QD14	(0)<0>	(0)<0>	(0.7)<0>	F-3
QD15	(0)<0>	(0)<0>	(0.7)<0>	F-3
QD16	(0)<0>	(0)<0>	(0.7)<0>	F-3
QD17	(0)<0>	(0)<0>	(0.7)<0>	F-3
QD18	(5.0)<5.0>	(4.8)<0>	(0)<5.0>	F-2
QD19	(4.9)<0>	(4.9)<4.9>	(0)<4.9>	F-2
QD20	1.1	8.8	1.7	F-4
QD21	1.3	5.6	1.9	E-2
QD22	5.0	8.8	5.6	E-3
QD23	(0)<0>	(0)<0>	(0.7)<0>	E-3

#### 9-4. Timer Display PC Board



### Location of Diodes

Symbol No.	Location
DX01	G-12
DX02	G-12
DX04	G-12
DX10	G-13
DX18	G-8
DX19	G-8
DX20	G-8
DX21	F-8
DX22	F-8

### Location of Diodes (For V-703W)

Symbol No.	Location
DX06	E-14
DX07	E-14

### Location of Diodes (For V-703T)

Symbol No.	Location
DX12	E-12
DX13	E-13

### Location of Diodes (For V-703G)

Symbol No.	Location
DX09	G-12
DX12	G-13
DX13	G-13

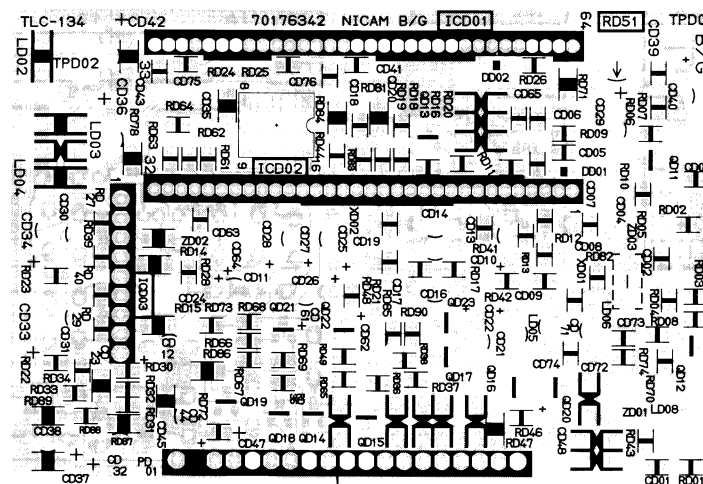
### Location of ICs

Symbol No.	Location
ICX01	F-7
ICX02	F-6
ICX03	F-7

**Voltage and Location of Transistors**  
V: REC, (V): PLAY

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
QX05	—	5.0	—	G-6
QX06	5.0	5.0	5.7	G-15
QX07	—	5.0	—	F-6

## UD01 NICAM PC Board

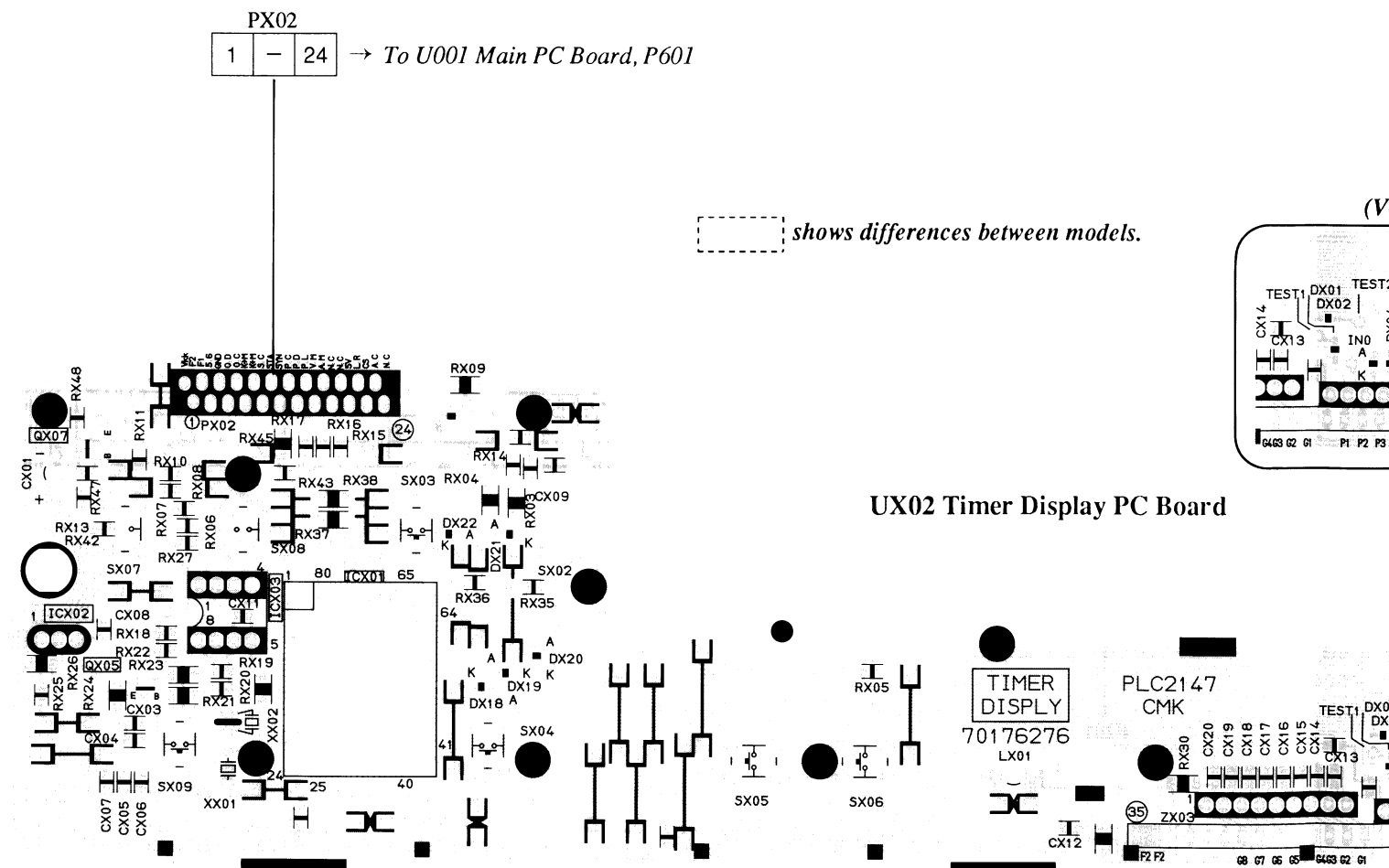


PD01

1	-	18	→ To U001 Main PC Board, PD01
---	---	----	-------------------------------

## PX02

1	-	24	→ To U001 Main PC Board, P601
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## UX02 Timer Display PC Board

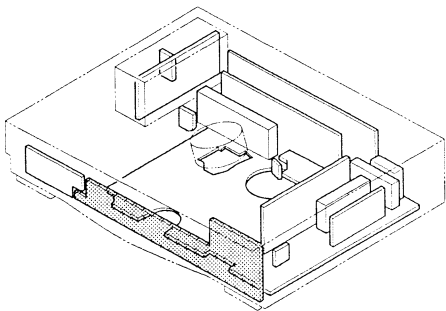
9-4. Timer Display PC Board

Transistors

<V>: MUTE OFF

Unit:V

	B	Location
	4.2	E-4
	5.9	F-4
	2.2	E-3
	(0.7)<0>	F-3
	(0.7)<0>	F-3
	(0.7)<0>	F-3
	(0.7)<0>	F-3
	(0)<5.0>	F-2
	(0)<4.9>	F-2
	1.7	F-4
	1.9	E-2
	5.6	E-3
	(0.7)<0>	E-3



Location of Diodes	
Symbol No.	Location
DX01	G-12
DX02	G-12
DX04	G-12
DX10	G-13
DX18	G-8
DX19	G-8
DX20	G-8
DX21	F-8
DX22	F-8

Location of Diodes (For V-703W)	
Symbol No.	Location
DX06	E-14
DX07	E-14

Location of Diodes (For V-703T)	
Symbol No.	Location
DX12	E-12
DX13	E-13

Location of Diodes (For V-703G)	
Symbol No.	Location
DX09	G-12
DX12	G-13
DX13	G-13

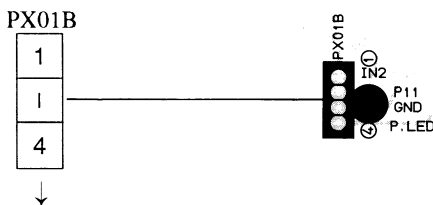
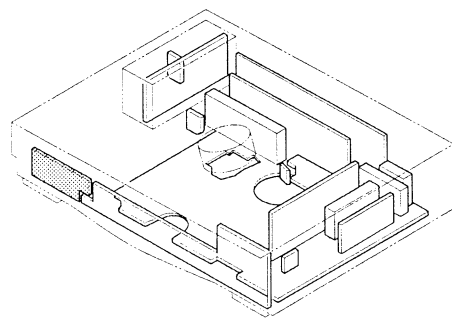
Location of ICs	
Symbol No.	Location
ICX01	F-7
ICX02	F-6
ICX03	F-7

Voltage and Location of Transistors

V: REC, (V): PLAY

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
QX05	-	5.0	-	G-6
QX06	5.0	5.0	5.7	G-15
QX07	-	5.0	-	F-6

9-5. SW/AV. Line PC Board

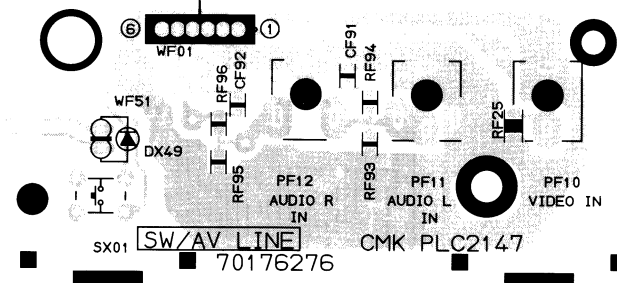


To UX02  
Timer Display PC Board,  
PX01A

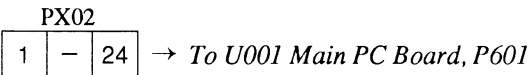


Location of Diode

Symbol No.	Location
DX49	C-15

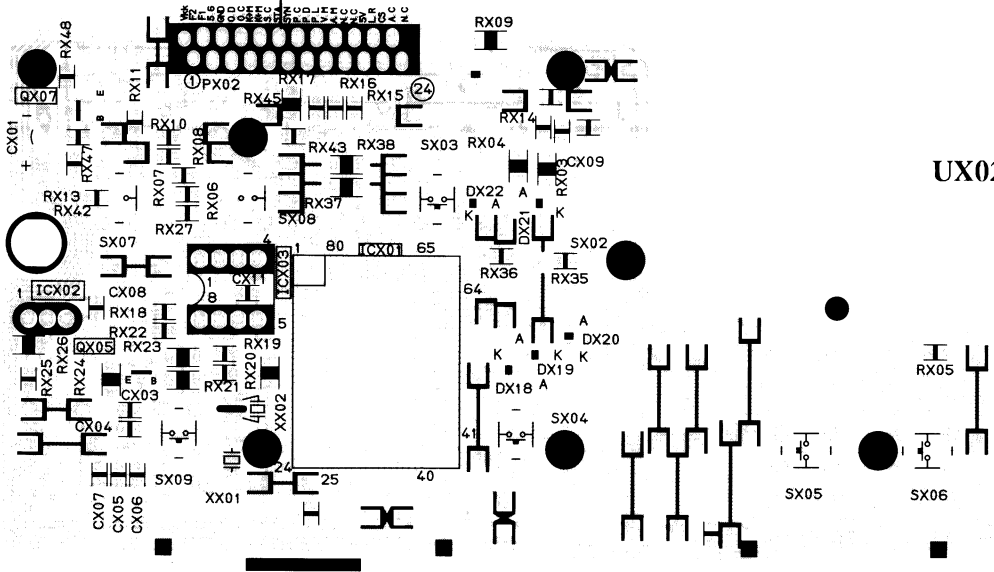


UX03 SW/AV. Line PC Board

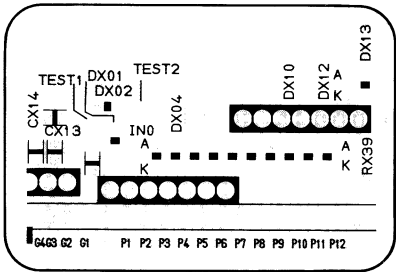


shows differences between models.

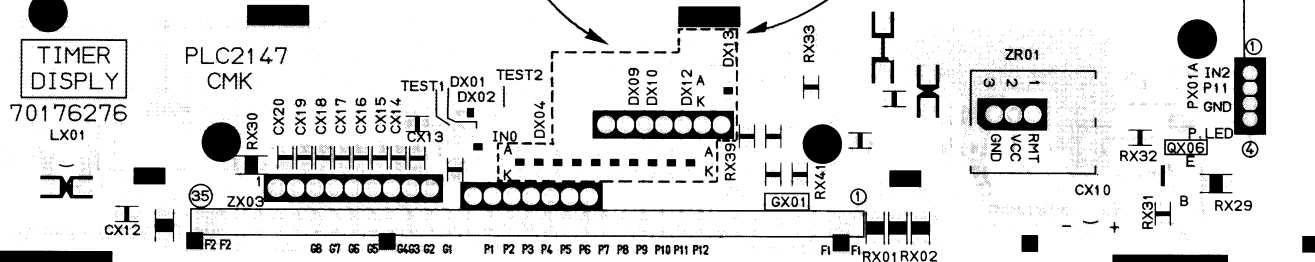
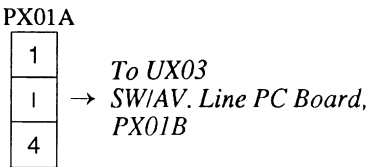
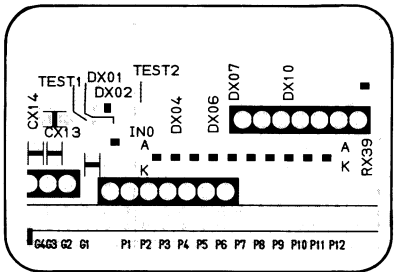
UX02 Timer Display PC Board



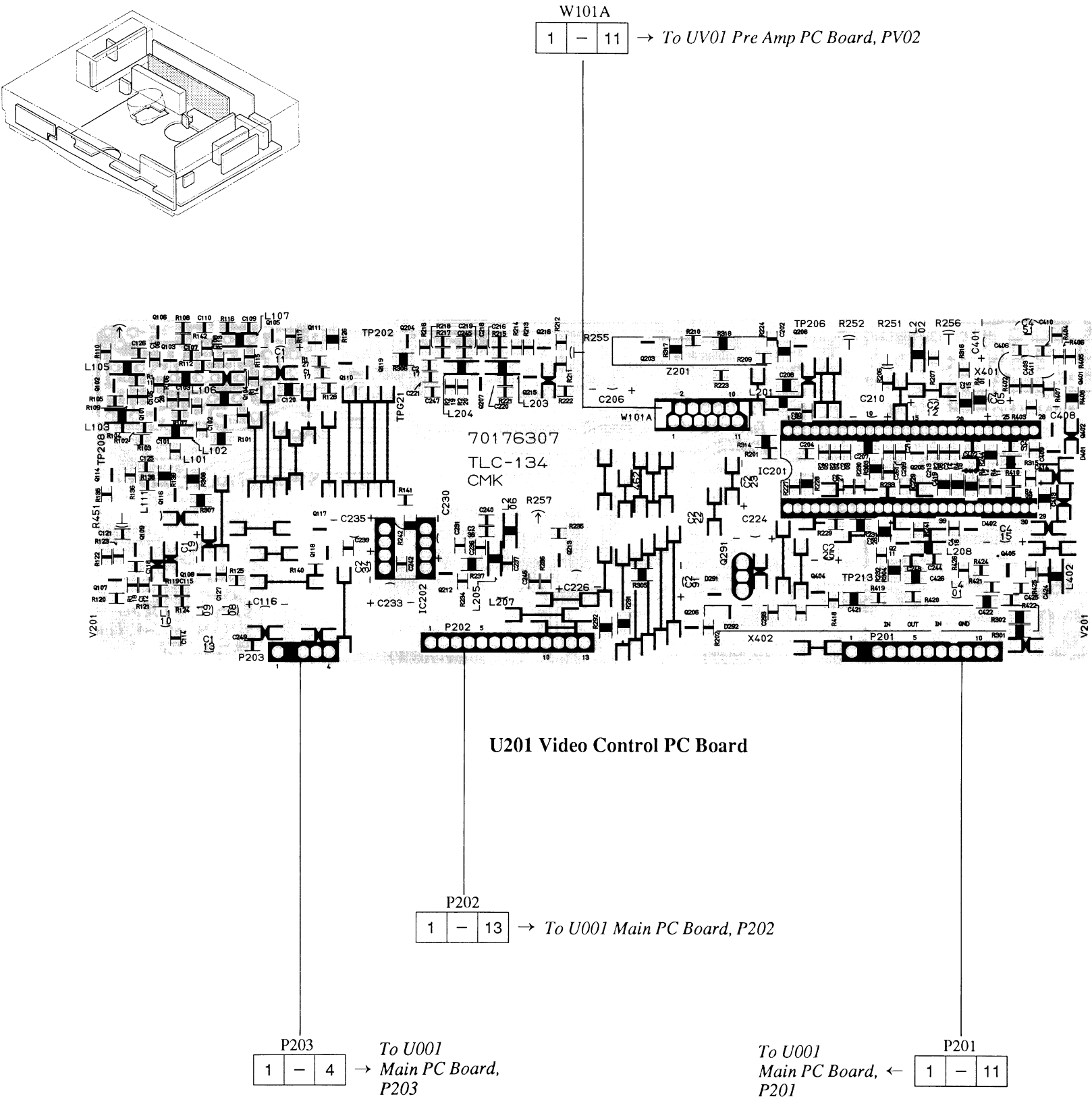
(V-703T)



(V-703W)



9-6. Video Control PC Board



Voltage and Location of Transistors  
V: ALL, (V): PLAY

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q101	0(1.8)	0(3.2)	0(2.5)	C-2
Q102	0(3.8)	0(1.7)	0(3.2)	C-1
Q103	0(3.3)	0(5.0)	0(3.8)	C-2
Q104	0(2.8)	0(2.3)	0	C-2
Q105	0(2.3)	0(5.0)	0(2.9)	C-2
Q106	0	0	0.1	C-2
Q107	0(1.8)	0(4.9)	0(2.4)	D-1
Q108	0(4.3)	0(5.0)	0(4.9)	D-2
Q110	2.3(0)	0	2.3(0.1)	C-3
Q111	0	0	0 (LP: 5.1)	C-2
Q114	6.3(0)	1.8(0)	2.5(0)	D-1
Q116	0(0.1)	5.1	5.1	D-2
Q117	0(1.8)	5.1(4.9)	0.1(2.4)	D-3
Q118	0	0.1(0)	0.1(5.1)	D-2
Q119	-	-	-	C-3
Q203	1.4(1.6)	0(0)	0.8(1.0)	C-4
Q204	-	-	-	C-3
Q205	0	2.3(0)	0.1(4.7)	D-6
Q206	0	0.1(4.7)	0.1	E-5
Q207	0.9(1.1)	4.3(4.1)	0.9(1.1)	C-3
Q208	3.1	0	2.5(2.4)	C-5
Q211	0	5.1	0	D-6
Q212	2.9(2.8)	5.1	3.5(3.4)	D-3
Q213	2.1	0	1.5(1.4)	D-4
Q215	1.5(1.7)	0(0)	1.5(1.7)	C-4
Q216	1.5(1.7)	0	0.9(1.1)	C-4
Q291	5.2(5.1)	6.6(6.4)	5.8	D-5
Q401	3.2	5.1	3.8	C-7
Q402	0	0	0.1(5.1)	D-7
Q404	2.5	0	1.9(2.1)	D-5

Location of ICs

Symbol No.	Location
IC201	D-5
IC202	D-3

Location of Diodes

Symbol No.	Location
D291	D-5
D292	E-5
D401	D-7
D402	D-6

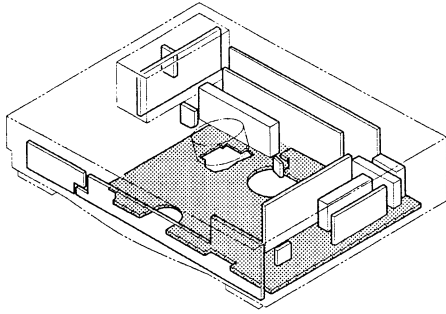
Location of Adjusting Parts

Symbol No.	Location
C451	C-6
R251	C-6
R252	C-6
R255	C-4
R256	C-6
R257	D-4
R451	D-1

Voltage and Location of Transistor  
V: ALL, (V): PLAY,

Symbol No.	Voltage (Unit:V)						Location
	1	2	3	4	5	6	
Q405	5.1	3.7	3.7	2.0	1.4	3.1	D-6

## 9-7. Main (PIF, Logic/Servo, Video, Audio) PC Board and Relay PC Board



### Location of ICs

Symbol No.	Location
IC501	G-8
IC503	C-10
IC601	C-13
IC831	B-13
IC833	F-6
IC834	E-6

### Location of ICs (For V-703G)

Symbol No.	Location
ICX91	G-7
ICX92	G-7

### Location of Adjusting Part

Symbol No.	Location
R752	F-16

### Location of Diodes

Symbol No.	Location
D081	F-6
D082	D-6
D083	D-6
D503	D-10
D504	D-11
D505	B-13
D580	B-2
D601	G-13
DI01	F-11
DY01	B-11

### Location of Diode (For V-703G)

Symbol No.	Location
D961	F-7

### Location of Diode (For V-703T)

Symbol No.	Location
D961	F-3

### Location of Diodes (For V-703W)

Symbol No.	Location
D761	—
DX98	F-4

### Voltage and Location of Transistors V: ALL, (V): MUTE ON (For V-703W)

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q081	0	0	0.7	D-6
Q082	12.0	12.0	11.3	C-6
Q083	5.0	4.9	4.2	D-6
Q084	8.8	8.8	8.1	D-6
Q085	0	0	0	A-4
Q086	5.0(5.0)	OPEN(5.0)	5.0(0.1)	B-4
Q087	1.7	0	1.1	C-6
Q092	0	0.7	0	G-3
Q761	0	0(2.5)	0(4.5)	—

### Voltage and Location of Transistors V: PLAY, (V): REC, [V]: OFF, <V>: EE

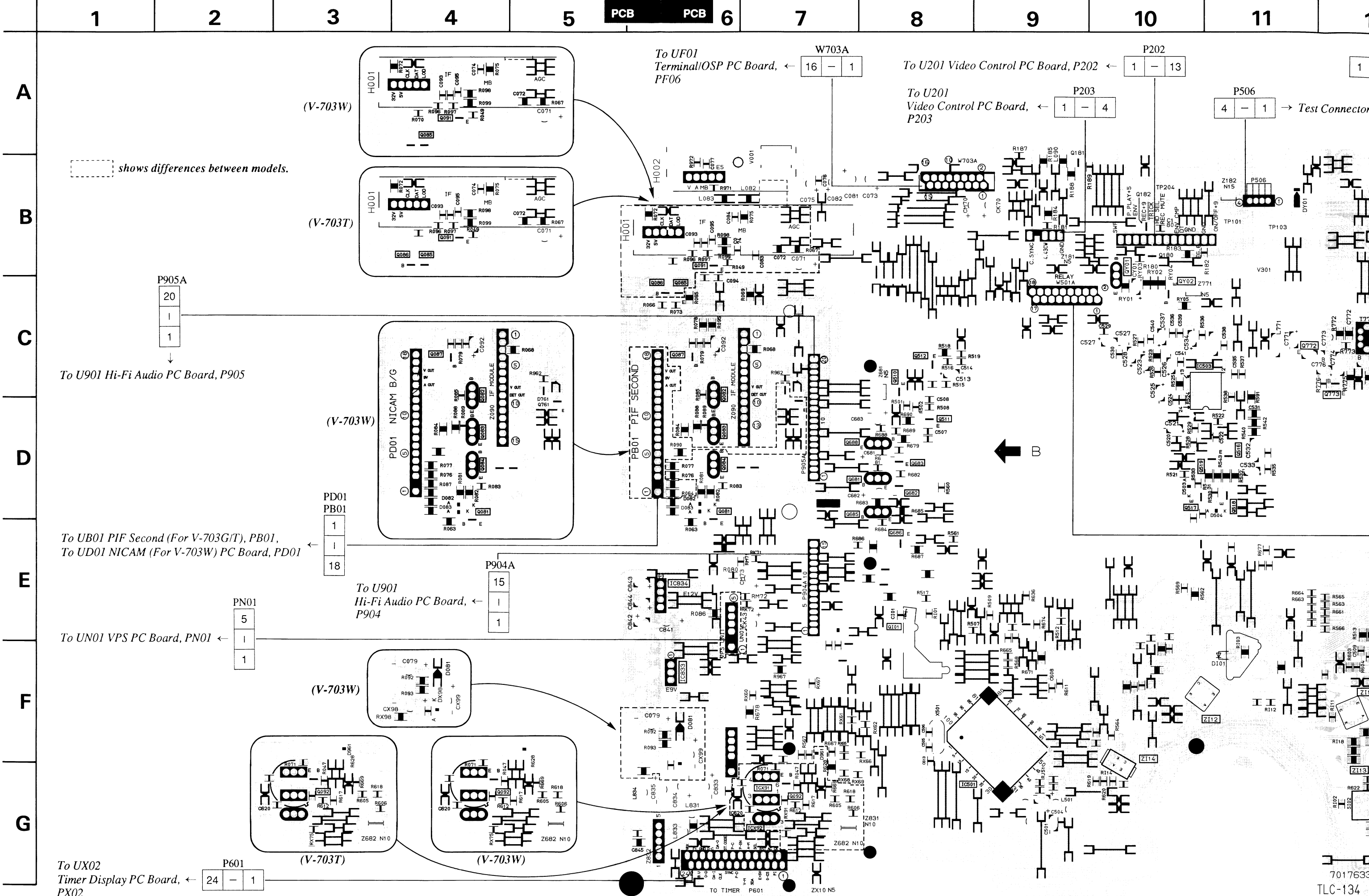
Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q510	5.0	0	5.0	C-8
Q511	0	2.9	0.1	D-8
Q512	2.6	5.0	3.2	C-8
Q516	2.5	2.4	5.0	D-11
Q517	0	0	5.0	D-10
Q518	0	0	5.0	D-11
Q519	2.5	2.5	2.0	D-10
Q520	3.8	5.0	4.6	F-12
Q610	5.0	0.9	5.0	F-12
Q611	0	13.7	0	E-12
Q613	0	0	0.7	G-13
Q614	0	5.0	0	G-13
Q681	8.8	—	—	D-7
Q682	8.3(8.1)	0(8.1)	8.8(7.4)	D-8
Q683	4.9(0)	8.8(0.1)	5.1(0.81)	D-8
Q685	4.9	4.9(0)	4.2(5.0)	D-7
Q686	5.1	5.0(0)	4.4(5.0)	E-8
Q688	4.9	4.9	4.2	D-7
Q771	13.8(0.8)	14.0(14.0)	14.0(1.5)	C-12
Q772	0(0)	13.8(0.7)	0(0.7)	C-11
Q773	0(0.7)	13.8(0.7)	0(1.4)	C-12
QI01	0	4.9	—	E-8
QI02	0	5.0	—	E-13
QY01	13.9	5.7	13.9	B-10
QY02	0	13.9	0	C-10

### Voltage and Location of Transistors V: ALL, (V): MUTE ON (For V-703G)

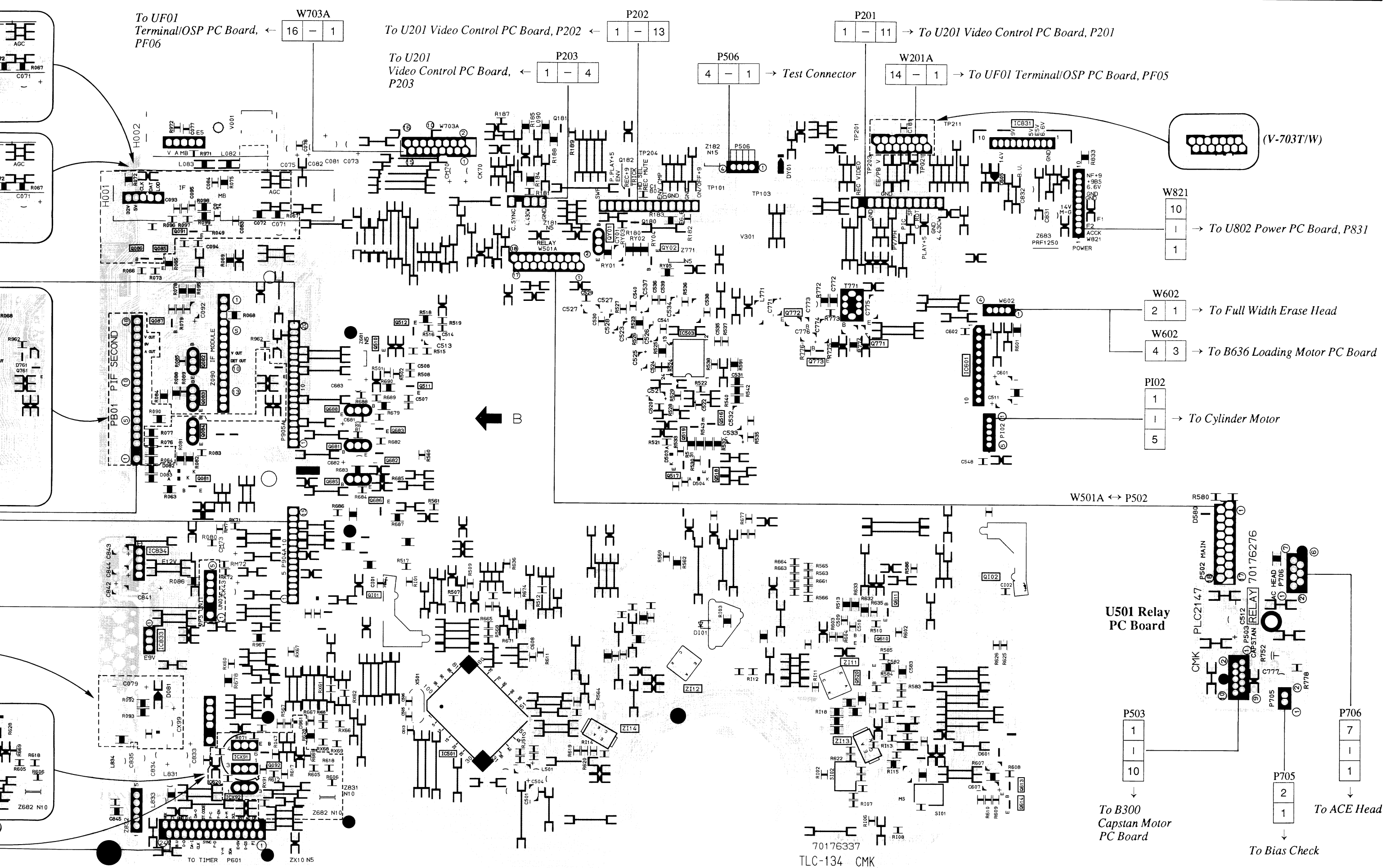
Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q081	0	0.1	0.7	D-6
Q082	11.9	11.9	11.2	C-6
Q083	5.0	5.0	4.3	D-6
Q084	8.9	8.9	8.1	D-6
Q085	0(0)	—	0.1(2.5)	C-6
Q086	5.0(5.0)	OPEN(5.0)	5.0(0.1)	C-6
Q087	3.1	0	2.4	C-6
Q091	5.9	10.1	6.6	B-6
Q092	0	0.7	0.1	G-7

### Voltage and Location of Transistors V: ALL, (V): MUTE ON (For V-703T)

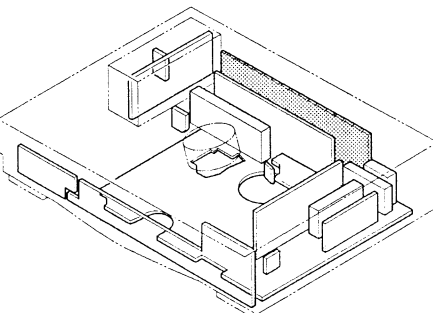
Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q081	0	0.1	0.7	D-6
Q082	11.9	11.9	11.2	C-6
Q083	5.0	5.0	4.3	D-6
Q084	8.9	8.9	8.1	D-6
Q085	(0)	—	0.1(2.5)	A-4
Q086	5.0(5.0)	OPEN(5.0)	5.0(0.1)	B-4
Q087	3.1	0	2.4	C-6
Q091	5.9	10.1	6.6	A-4
Q092	0	0.7	0.1	G-4







9-8. Terminal/OSP PC Board



Location of Diodes

Symbol No.	Location
DF01	E-5
DF02	E-5
DF03	E-5
DF04	E-5
DF05	G-3
DF07	G-3
DF08	E-4
DF09	F-4
DF10	E-5
DF11	F-4
DF12	F-3
DF13	G-5
DF41	F-7
DF42	F-7
DF43	E-7
DF44	F-7
DF45	E-6
DF46	E-6
DF47	F-6
DF48	F-6

Location of ICs

Symbol No.	Location
ICE01	F-1
ICF01	F-3
ICF02	F-4
ICF03	F-3
ICF71	F-7

Location of Adjusting Part

Symbol No.	Location
CE51	F-1

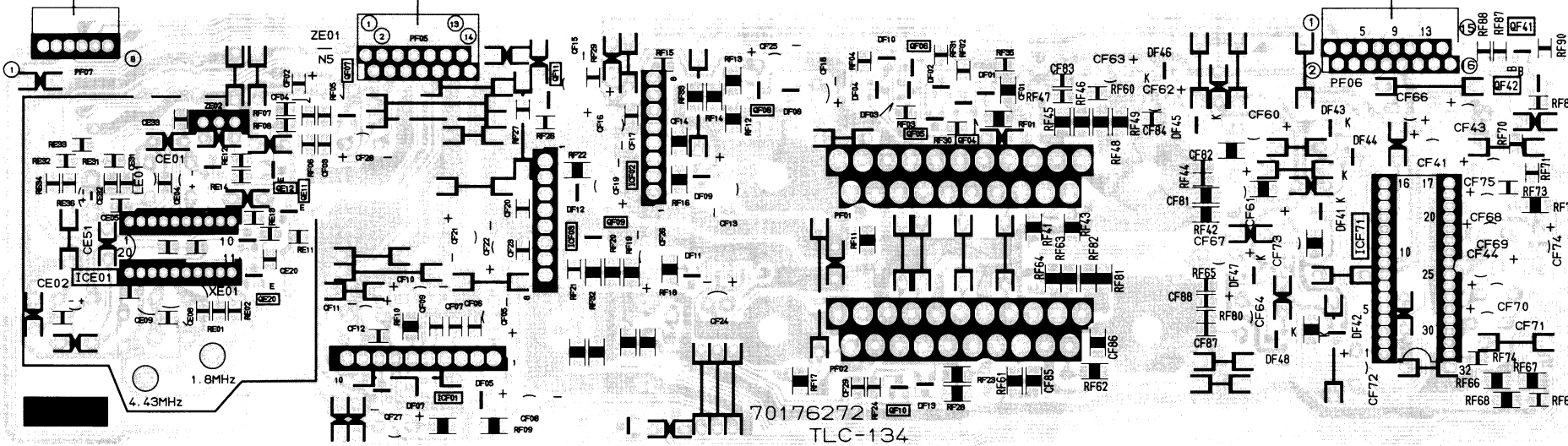
Voltage and Location of Transistors  
V: ALL, (V''): PLAY, <V>: OSP ON

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
QE11	2.6<2.8>	0<0>	2.0<2.1>	F-2
QE12	2.0<2.0>	5.0<5.0>	2.6<2.6>	F-2
QE20	0<0>	1.5<0>	0<5.0>	F-2
QF04	12.0	12.0	0	E-5
QF05	0	0	4.5	E-5
QF06	0	0	6.3	E-5
QF07	1.5	0	0.9	E-2
QF08	2.7	0	2.0	E-4
QF09	2.9	0	2.2	F-4
QF10	0	6.9	0	G-5
QF11	1.9	0	1.2	E-3
QF41	-	-	-	E-8
QF42	-	-	-	E-8

PF07 1 - 6 → To UX03 SW/AV. Line PC Board, WF01

PF05 1 - 14 → To U001 Main PC Board, W201A

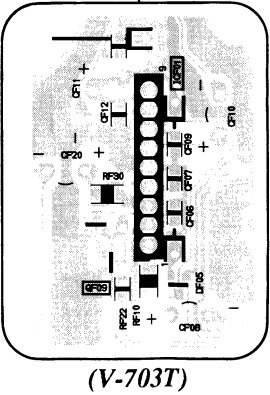
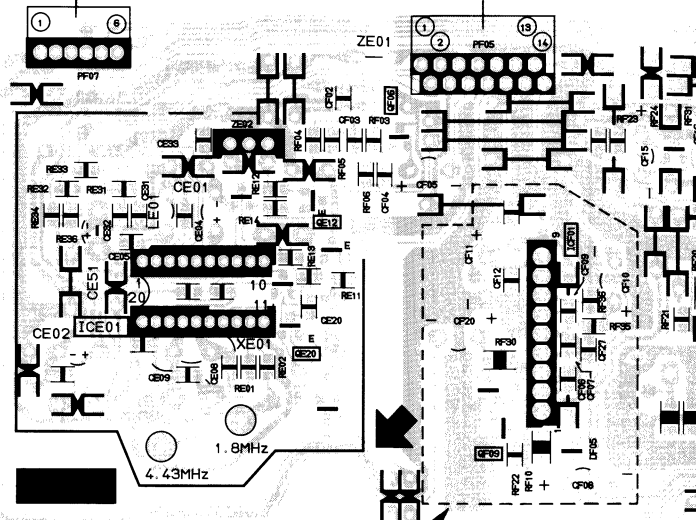
To U001 Main PC Board, W703A ← PF06 1 - 16



UF01 Terminal/OSP PC Board (V-703W)

PF07 1 - 6 → To UX03 SW/AV. Line PC Board, WF01

PF05 1 - 14 → To U001



(V-703T)

shows differences between models.

Location of ICs

Symbol No.	Location
ICE01	F-1
ICF01	F-3
ICF02	F-4
ICF03	F-3
ICF71	F-7

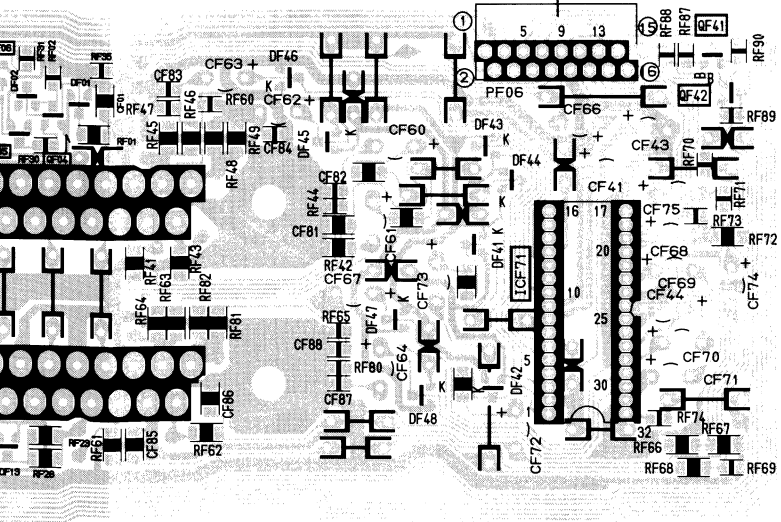
Location of Adjusting Part

Symbol No.	Location
CE51	F-1

Voltage and Location of Transistors  
V: ALL, (V): PLAY, <V>: OSP ON

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
QE11	2.6<2.8>	0<0>	2.0<2.1>	F-2
QE12	2.0<2.0>	5.0<5.0>	2.6<2.6>	F-2
QE20	0<0>	1.5<0>	0<5.0>	F-2
QF04	12.0	12.0	0	E-5
QF05	0	0	4.5	E-5
QF06	0	0	6.3	E-5
QF07	1.5	0	0.9	E-2
QF08	2.7	0	2.0	E-4
QF09	2.9	0	2.2	F-4
QF10	0	6.9	0	G-5
QF11	1.9	0	1.2	E-3
QF41	-	-	-	E-8
QF42	-	-	-	E-8

To U001 Main PC Board, W703A ← PF06  
1 — 16

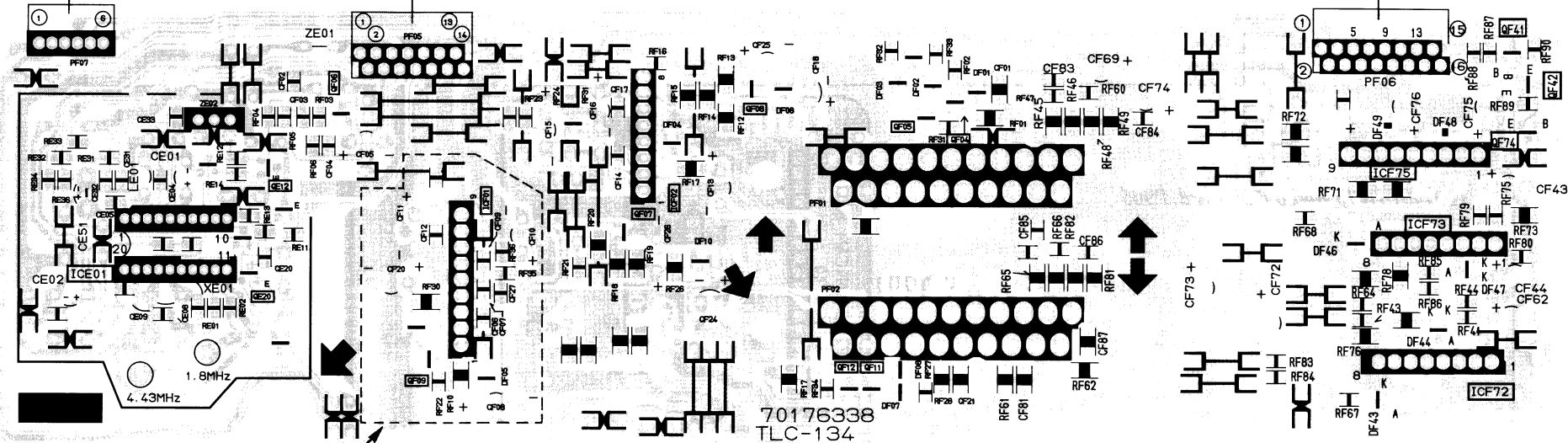


03W)

PF07  
1 — 6 → To UX03 SW/AV. Line PC Board, WF01

PF05  
1 — 14 → To U001 Main PC Board, W201A

To U001 Main PC Board, W703A ← PF06  
1 — 16



UF01 Terminal/OSP PC Board (V-703G/T)

Location of Diodes

Symbol No.	Location
DF01	C-14
DF02	C-14
DF03	C-13
DF04	C-12
DF05	D-12
DF06	C-13
DF07	D-13
DF08	D-13

Location of ICs

Symbol No.	Location
ICE01	D-10
ICF01	C-12
ICF02	C-12
ICF72	D-16
ICF73	C-16
ICF75	C-16

Location of Diodes

Symbol No.	Location
DF10	C-13
DF43	D-16
DF44	D-16
DF46	D-15
DF47	D-16
DF48	C-16
DF49	C-16

Location of Adjusting Part

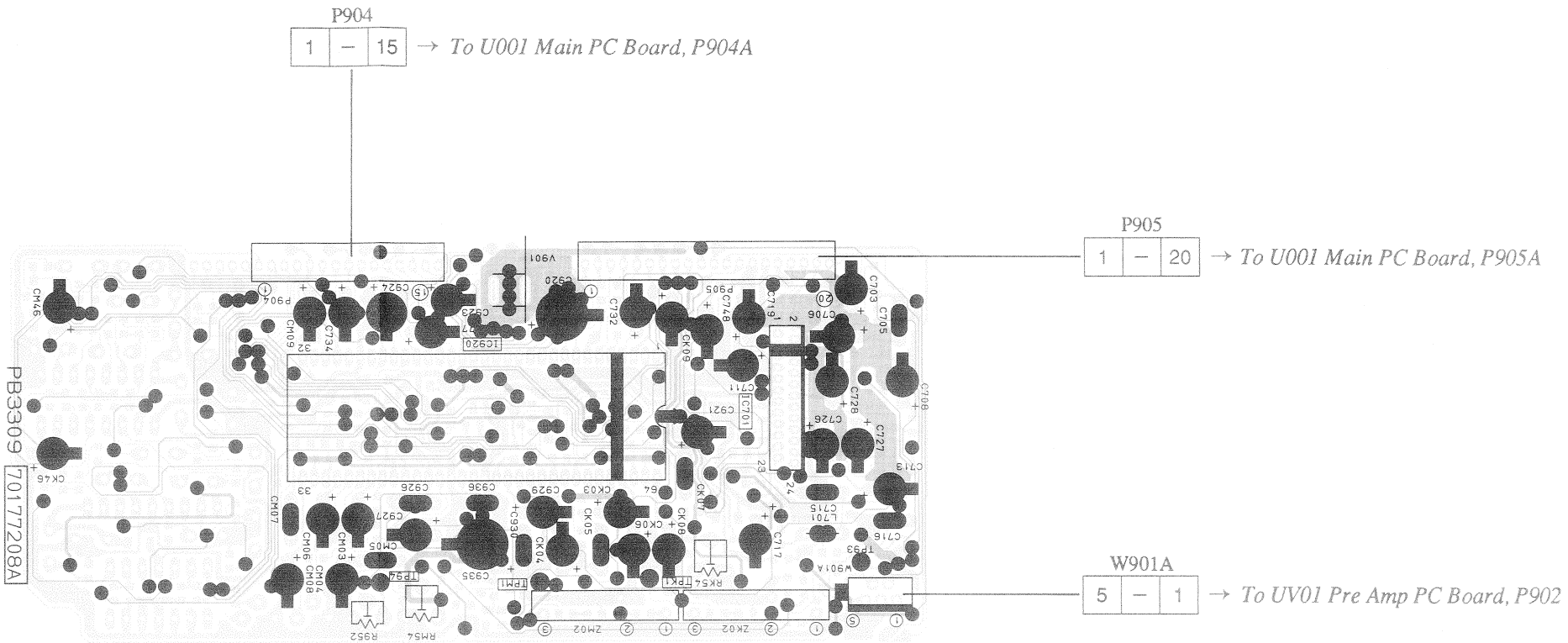
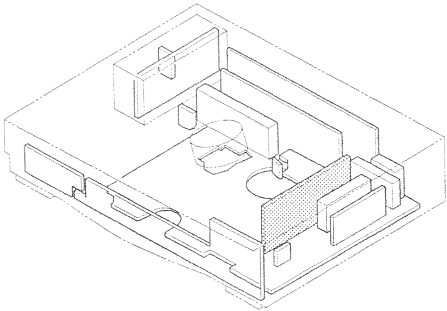
Symbol No.	Location
CE51	C-10

Voltage and Location of Transistors  
V: ALL, (V): PLAY, <V>: OSP ON

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
QE11	2.6<2.8>	0<0>	2.0<2.1>	C-11
QE12	2.0<2.0>	5.0<5.0>	2.6<2.6>	C-11
QE20	0<0>	1.5<0>	0<5.0>	D-11
QF04	12.0	12.0(0)	1.0(12.0)	C-14
QF05	0	-	3.8(0)	C-13
QF06	1.5	0	0.9	D-11
QF07	2.7	0	2.0	C-12
QF08	2.7	0	2.0	C-13
QF09	0	2.8(0)	4.5(0)	D-11
QF10	1.9	0	1.2	C-12
QF11	12.0	12.0(0)	1.0(12.0)	D-13
QF12	0	-	4.5(0)	D-13
QF41	0	0	0(0.7)	C-16
QF42	0	0	0(0.7)	C-16
QF74	0	9.0(0)	4.5(0)	C-16

shows differences between models.

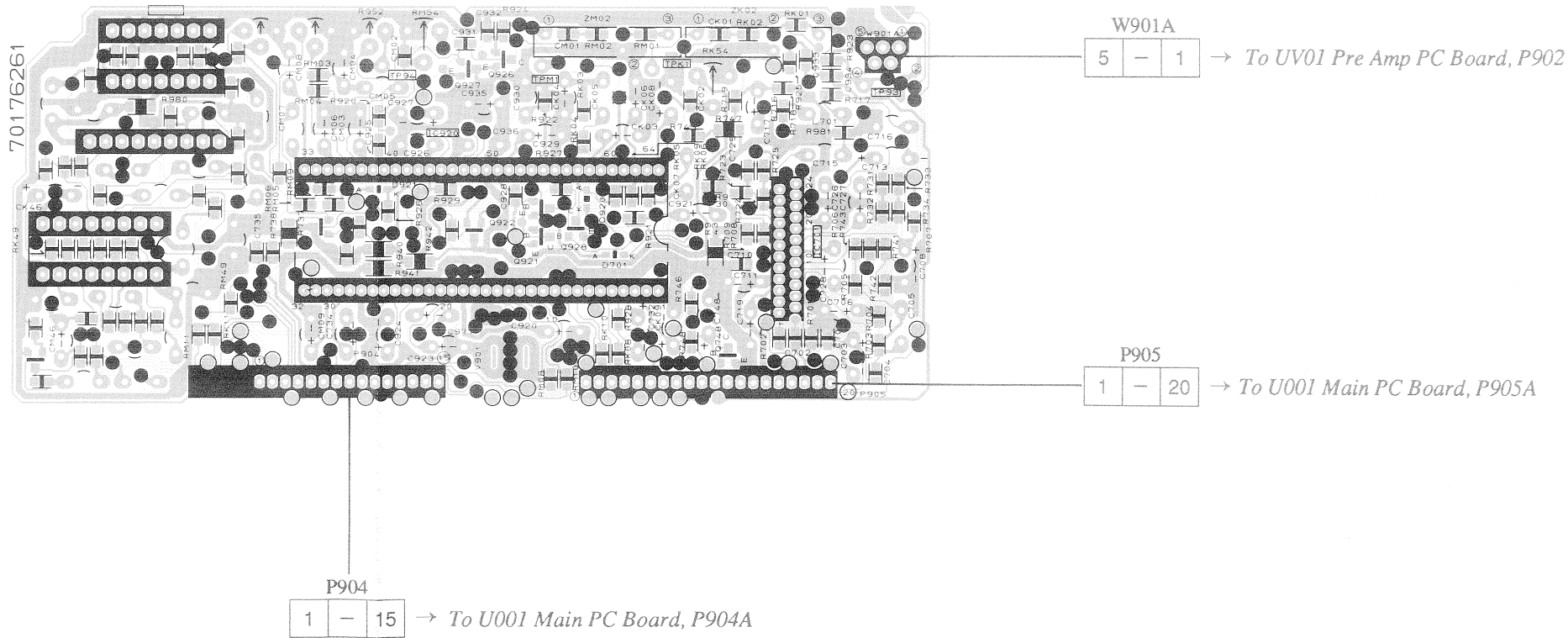
9-9. Hi-Fi Audio PC Board



U901 Hi-Fi Audio PC Board  
(Top Side)



U901 Hi-Fi Audio PC Board  
(Bottom Side)



Location of ICs

Symbol No.	Location
IC920	B-6
IC701	B-8

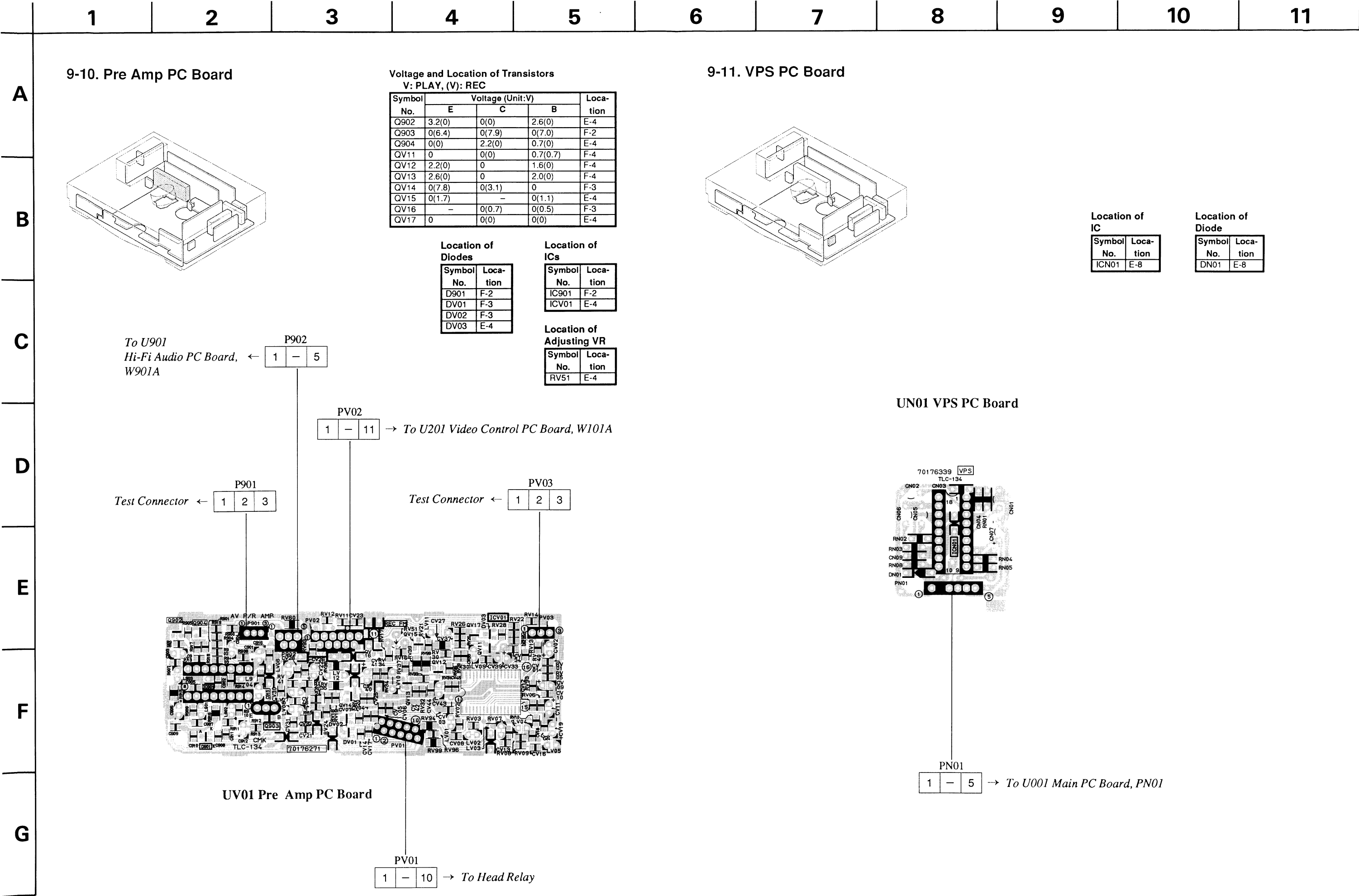
Location of Diodes

Symbol No.	Location
D701	B-7
D920	B-7

Voltage and Location of Transistors  
V: REC, (V): PLAY

Symbol No.	Voltage (Unit:V)			Location
	E	C	B	
Q748	0(0)	6.0(0)	0(0.7)	C-7
Q926	0(0)	0(0)	0(2.5)	A-6
Q927	2.8(0)	0(0)	2.2(2.3)	B-6

The locations of each parts are shown on the bottom side.



# SECTION 4 PARTS LIST

## SAFETY PRECAUTION

The parts identified by  $\triangle$  mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals. The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

## NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

Parts marked # are of chip type and mounted on original PC boards.

However, when they are placed for servicing works, use discrete parts listed on the parts list.

This parts list is based on the model V-703G. For V-703T and V-703W different parts only are listed on the difference list.

## ABBREVIATIONS

### 1. Integrated circuit (IC)

### 2. Capacitor (Cap)

- **Unit** **Ex.**  
 F ..... farad  
 MF ..... microfarad ( $\mu\text{F} = 10^{-6}\text{F}$ ) 10MF = 10 $\mu\text{F}$   
 PF ..... picofarad ( $\text{pF} = 10^{-6}\mu\text{F} = 10^{-12}\text{F}$ ) 10PF = 10pF
- **Capacitance tolerance (for nominal capacitance higher than 10pF)**
- **Capacitance tolerance (for nominal capacitance lower than 10pF)**

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	$\pm 0.1$	$\pm 0.25$	$\pm 0.5$	$\pm 1$	$\pm 2$	$\pm 5$	$\pm 10$	$\pm 20$	$\pm 30$

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+100 0	+30 -10	+50 -10	+75 -10	+20 -10	+100 -10	+40 -20	+150 -10	+80 -20

Ex. 10MF J = 10 $\mu\text{F} \pm 5\%$

Symbol	B	C	D	F	G
Tolerance pF	$\pm 0.1$	$\pm 0.25$	$\pm 0.5$	$\pm 1$	$\pm 2$

### 3. Resistor (Res)

Ex. 10PF G = 10pF  $\pm 2\text{pF}$

- **Unit** **Ex.**  
 No Mark .....  $\Omega$  10 ..... 10 $\Omega$   
 K ..... k $\Omega$  10K ..... 10k $\Omega$   
 M ..... M $\Omega$  10M ..... 10M $\Omega$   
 W ..... Watt 1W ..... 1 Watt
- **Resistance tolerance**

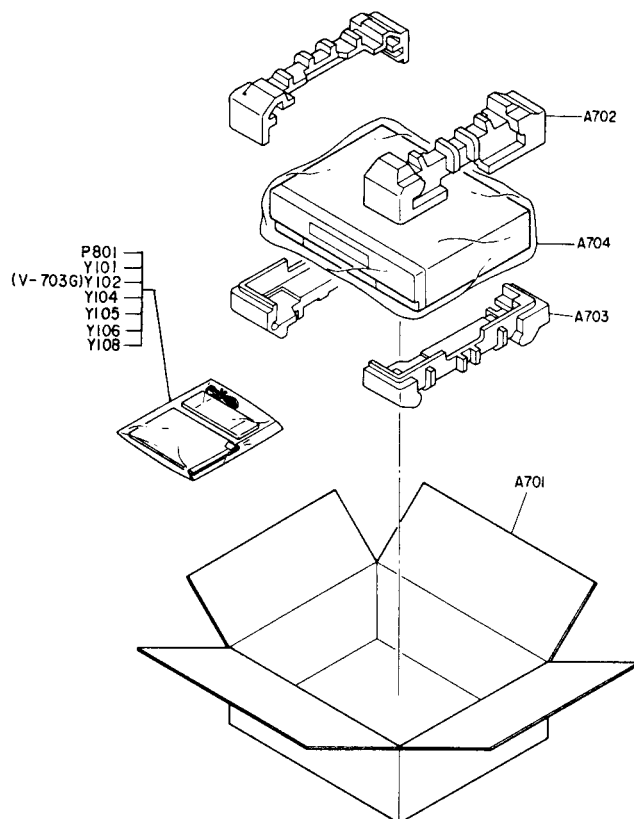
Symbol	B	C	D	F	G	J	K	M
Tolerance %	$\pm 0.1$	$\pm 0.25$	$\pm 0.5$	$\pm 1$	$\pm 2$	$\pm 5$	$\pm 10$	$\pm 20$

Ex. 470 J = 470 $\Omega \pm 5\%$

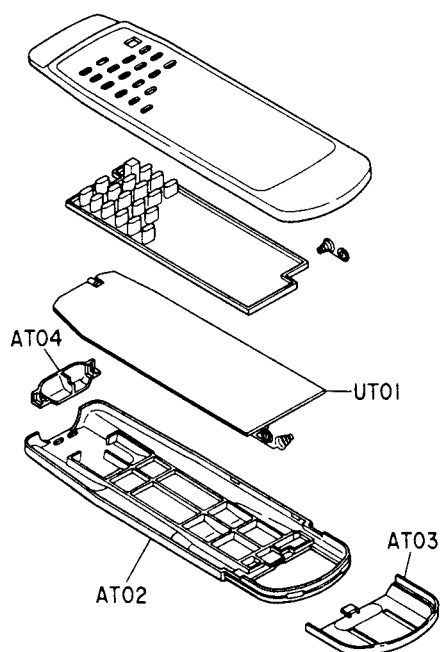


## 1. EXPLODED VIEWS

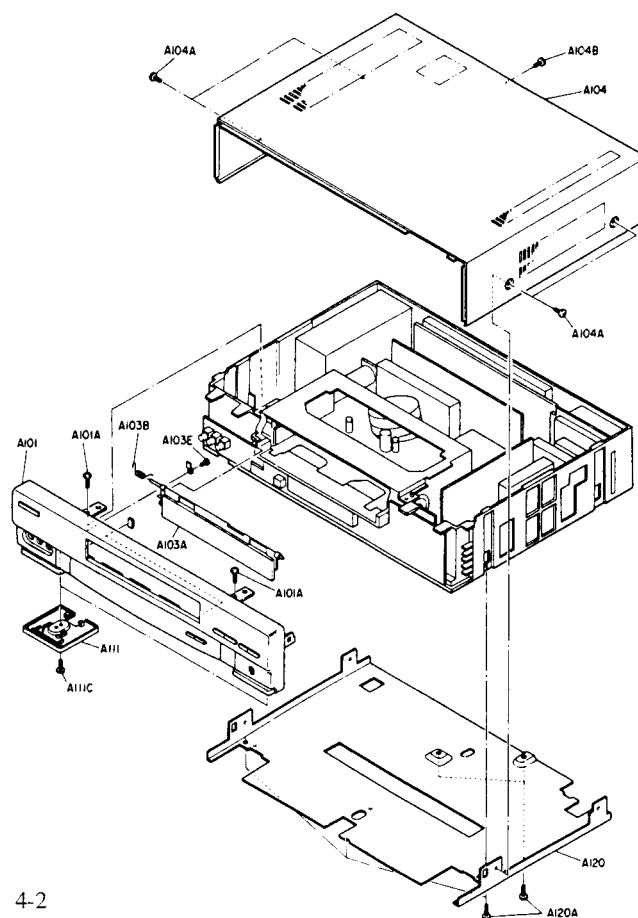
### (1) Packing Assembly



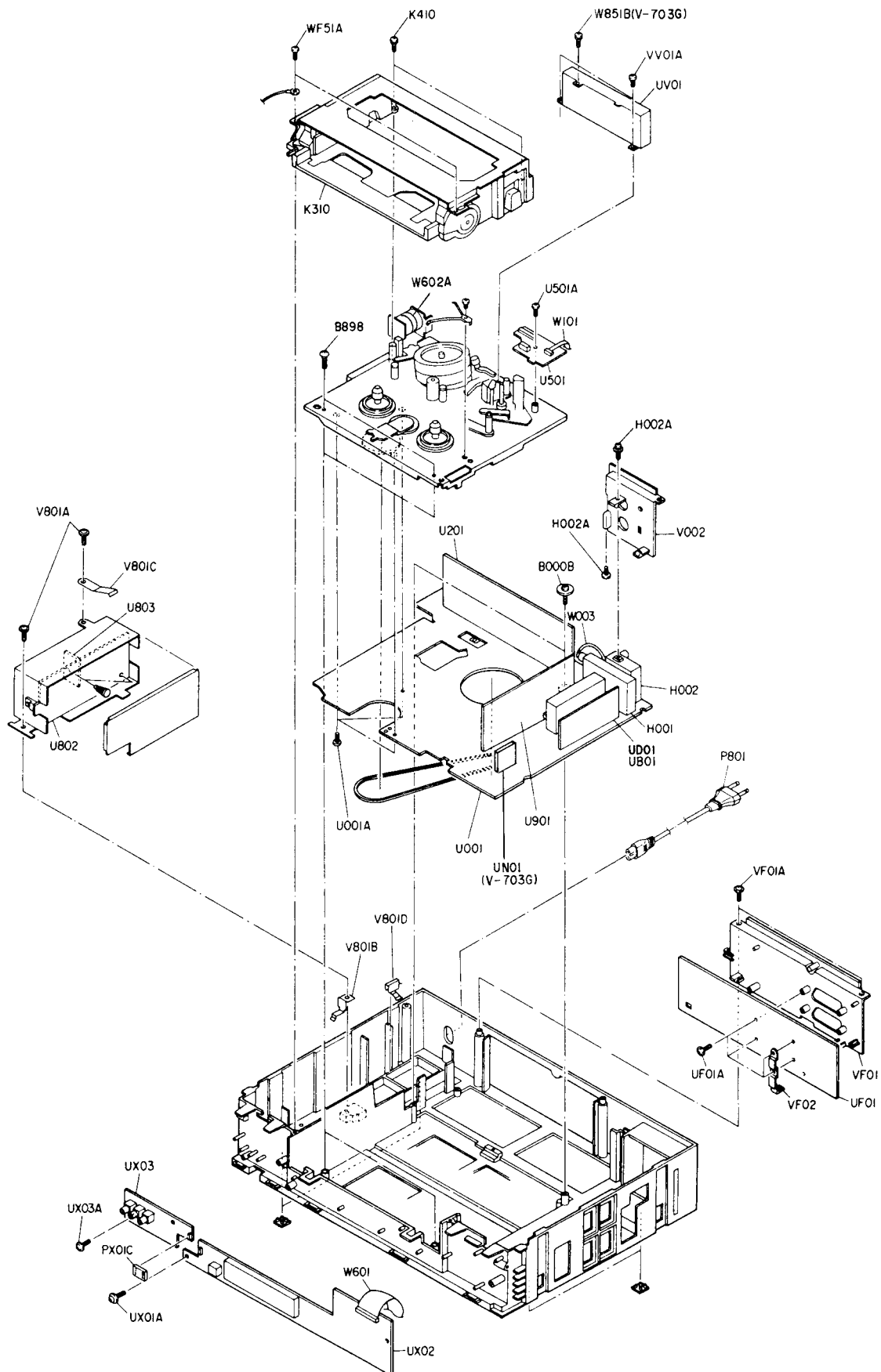
### (2) Remote Control Unit



### (3) Cabinet Assembly

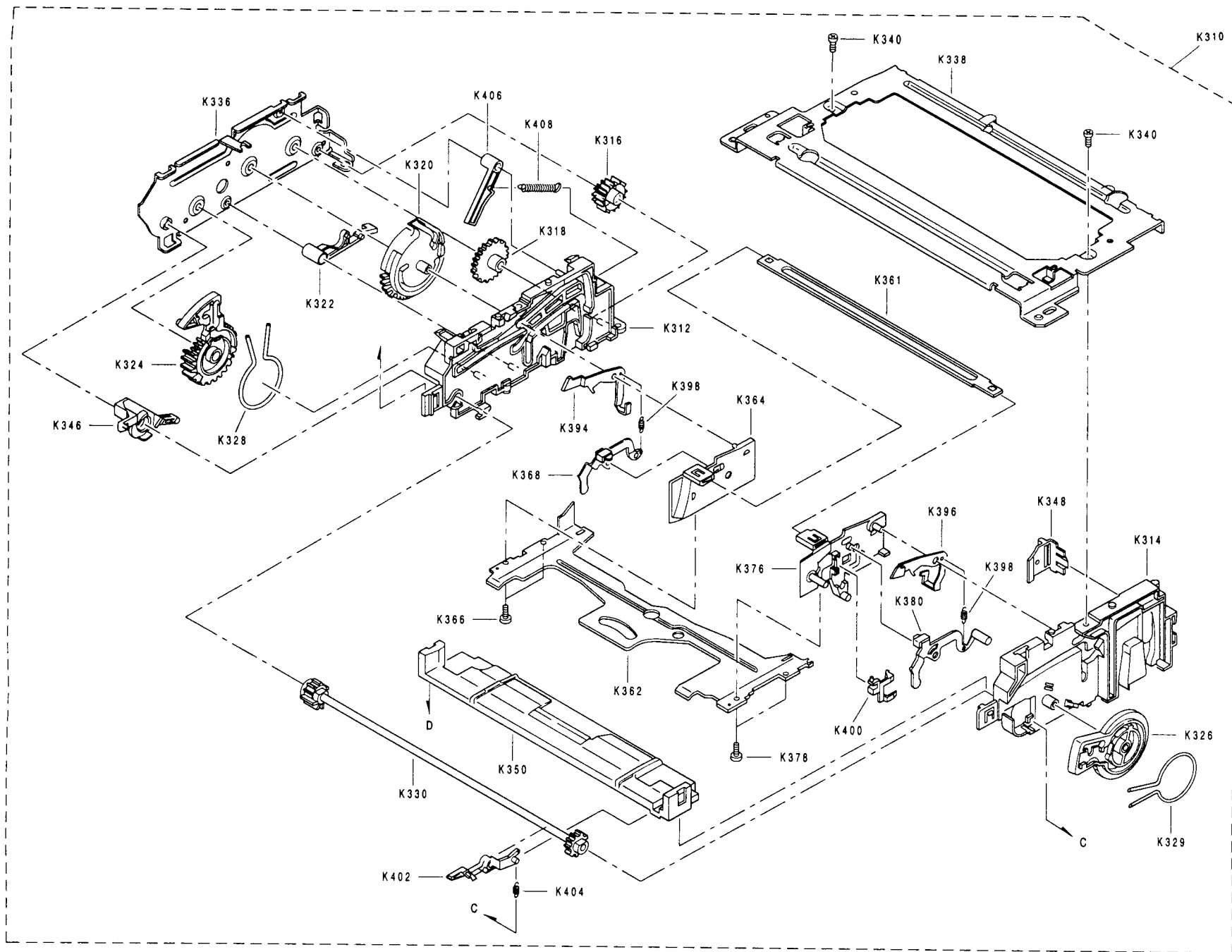


#### (4) Chassis Assembly

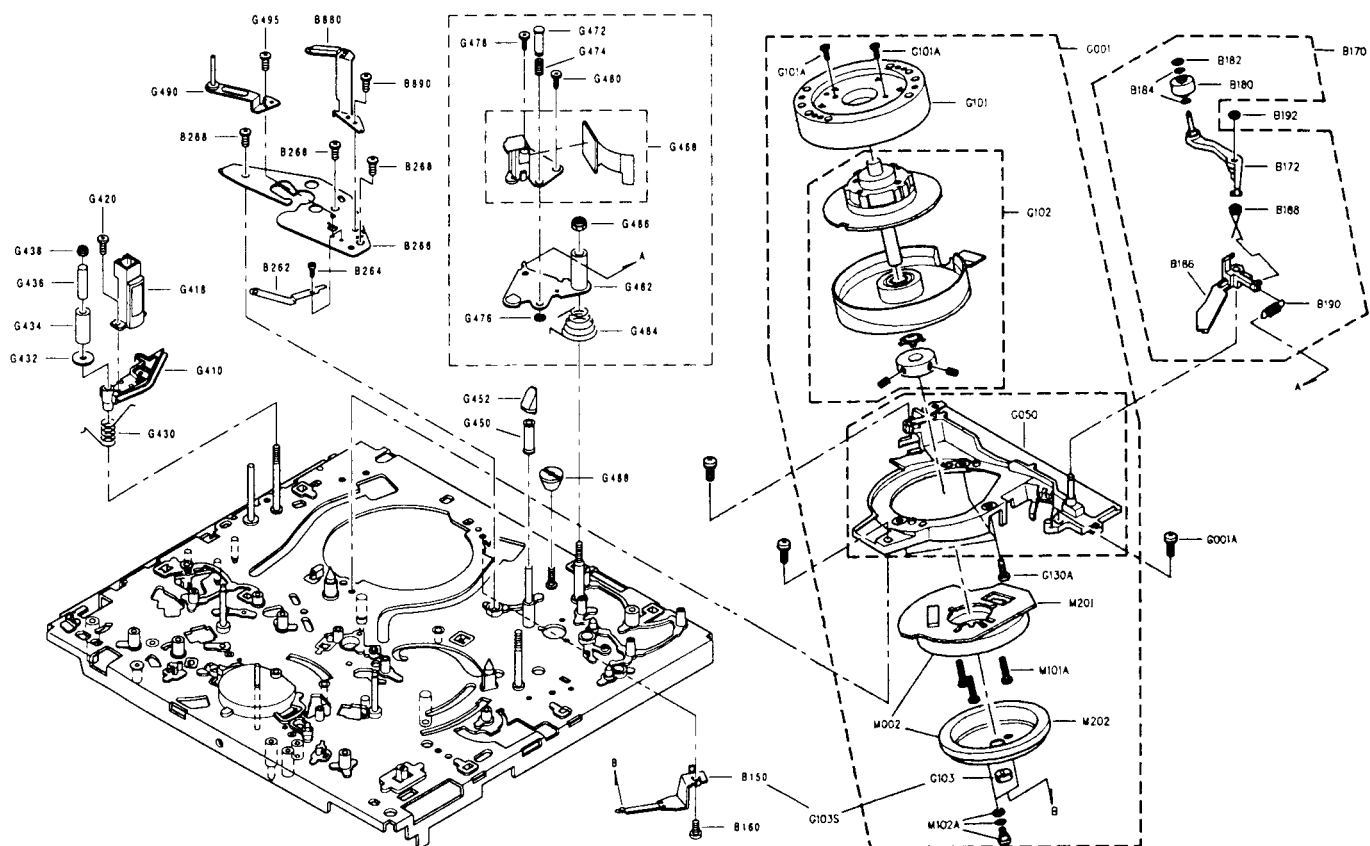




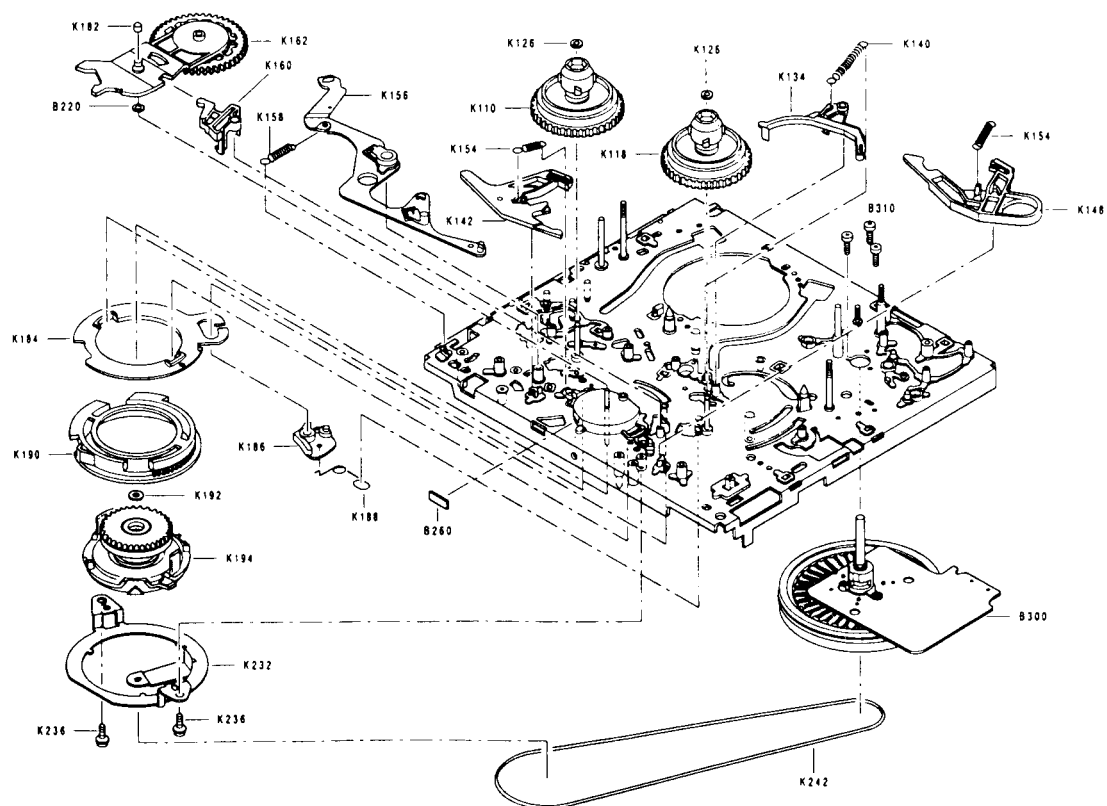
(5) Cassette Holder Assembly



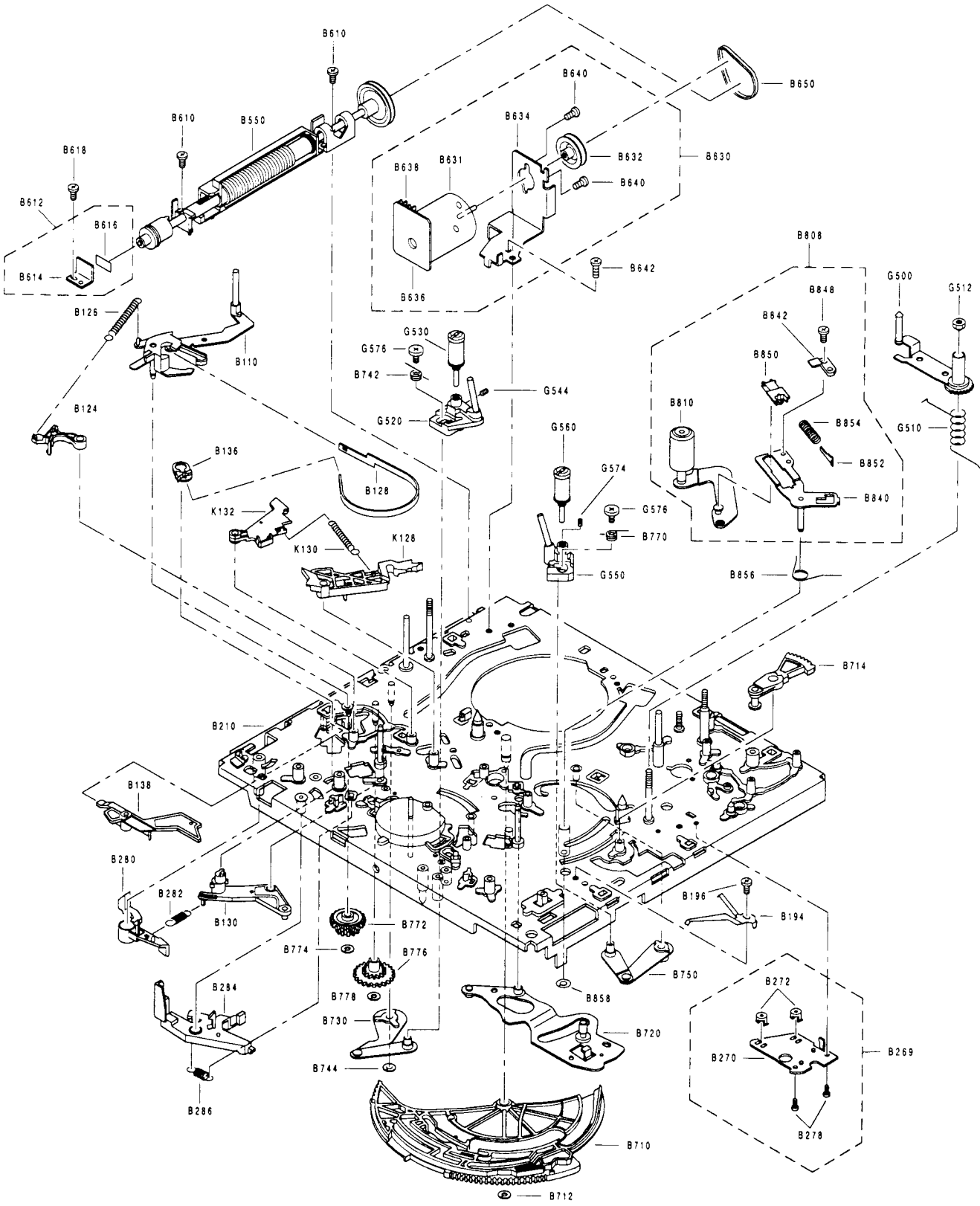
## (6) Mechanical Parts (1)



## (7) Mechanical Parts (2)



(8) Mechanical Parts (3)



## 2. PARTS LIST

LOCATION NUMBER	PART NUMBER	DESCRIPTION	LOCATION NUMBER	PART NUMBER	DESCRIPTION
- MECHANICAL PARTS -			G103	70325494	Ground Cap Assy
A101	70884270	Front Panel	G103S	70903458	Ground Brush KIT
A101A	72471082	Screw, 3x10mm	G130A	70391409	Screw 2. 6x8mm
A103A	70868593	Cassette Door	G175B	23030107	Screw, 3x5mm
A103B	70356258	Spring	G410	70363227	Lever
A103E	70391443	Screw 2x6mm	G418	70183035	FE Head
A104	70824382	Top Cover	G420	70391024	Screw 2. 6x6mm
A104A	70391818	Screw 3x8mm	G430	70356284	Spring
A104B	70391440	Screw 3x10mm	G432	70379607	Flange
A120	70815765	Bottom Cover	G434	70348112	Guide Roller
A701	70917766	Case	G436	70338211	Guide Sleeve
A702	70921501	Packing(Top)	G438	70393030	Nut 2. 6x3mm
A703	70921502	Packing(Bottom)	G450	70379067	Guide Sleeve
A704	70933058	Cover	G452	70368169	Guide Cap
AT02	70108340	Case(Lower)	G462	70328425	ACE Main Base Sub Assy
AT03	70108341	Case(Battery)	G468	70182084	ACE Head Sub Assy
AT04	70108342	Filter	G472	70378601	Shaft
B000B	70391800	Screw 4x12mm	G474	70351665	Spring
B110	70328424	Lever Assy	G476	23002250	E-ring
B124	70363222	Lever	G478	23712308	Screw 3x0. 5x8mm
B126	70356277	Spring	G480	70391322	Adjust Screw
B128	70325540	Band Brake Assy	G484	70356286	Spring
B130	70325541	Lever Assy	G486	70393030	Nut 2. 6x3mm
B136	70368249	Band Holder	G490	70320328	No. 10 Guide Assy
B138	70366171	Drive Mode Slider	G500	70320308	Lever Assy
B150	70325542	Ground Brush Assy	G510	70356285	Spring
B160	70391345	Screw 3x3mm	G512	70393044	Nut
B170	70326690	Lever Assy	G520	70322499	Slider Assy
B180	70353164	Cleaner	G530	70322500	Roller Assy
B182	70396284	Washer 4. 0x1. 6x0. 35mm	G544	70391570	Screw 2x3mm
B184	70396048	Washer 3. 9x2. 1x0. 25mm	G550	70322501	Slider Assy
B192	70396284	Washer 4. 0x1. 6x0. 35mm	G560	70322502	Roller Assy
B194	70352221	Spring	G574	70391570	Screw 2x3mm
B196	70391345	Screw 3x3mm	G576	70391780	Screw
B264	23712203	Screw 2x3mm	H001	70121809	Tuner EG455L
B268	70391683	Screw 2. 6x6mm	H002	70123438	RF Modulator MSD254X1
B280	70363024	F/L Lever	H002A	23721305	Screw 3x5mm
B282	70356265	Spring	K110	70326546	Reel Disk Assy
B284	70363025	Lever	K118	70326547	Reel Disk Assy
B286	70356266	Spring	K126	70396191	Washer FI 2. 1x5x 0. 5mm
B300	70125660	Motor Assy	K128	70363026	Lever
B310	23129584	Screw	K130	70356275	Spring
B550	70322485	Drive Shaft Assy	K132	70363027	Lever
B610	70391683	Screw 2. 6x6mm	K134	70326548	Lever Assy
B612	70322488	Plate Assy	K140	70356271	Spring
B618	70391349	Screw 2. 6x3mm	K142	70326549	Lever Assy
B630	70322489	Motor Assy	K148	70326550	Lever Assy
B642	70391685	Screw 3x4mm	K154	70356272	Spring
B650	70342111	Belt	K156	70363188	Lever Assy
B710	70333433	Cam Gear	K158	70356273	Spring
B712	70396194	Washer 3. 1x6x0. 5mm	K160	70363217	Lever
B714	70322490	Lever Assy	K162	70326551	Idle Arm Assy
B720	70322491	Lever Assy	K182	70368241	Cap
B730	70322492	Link Assy	K188	70350036	Spring
B742	70356280	Spring	K190	70333417	Clutch Cam
B744	70396171	Washer 2. 6x6x0. 35mm	K192	70394244	Washer
B750	70322493	Link Assy	K194	70326589	Clutch Assy
B770	70356281	Spring	K232	70371912	Holder
B772	70333422	Gear	K236	23721004	Screw 2. 6x10mm
B774	70396170	Washer 2. 1x4x0. 35mm	K242	70342112	Reel Belt
B776	70333425	Gear	K310	70314349	Front Loading Assy
B778	70396170	Washer 2. 1x4x0. 35mm	K316	70333407	Gear
B808	70322504	Pinch Lever Assy	K318	70333408	Gear
B848	70391407	Screw 2x0. 4x2mm	K320	70333409	Gear
B856	70356279	Spring	K324	70333410	Arm Gear
B858	70396248	Washer 2. 6x5. 0x0. 5mm	K326	70333411	Arm Gear
B880	70325543	Bracket Assy	K330	70324864	Drive Shaft Assy
B898	70391081	Screw 4x12mm	K340	70391354	Screw 3x6mm
G001	70311788	Cylinder Assy	K346	70363232	Lever
G001A	23723308	Screw 3x8mm	K402	70363234	Lever
G101	70325639	Upper Cylinder Assy	K404	70356289	Spring
G101A	70391398	Screw 2. 6x8mm	K410	23723308	Screw 3x8mm
G102	70325592	Lower Cylinder Assy	M002	70903664	Cylinder Motor
			△P801	23176911	Power Cord
			PX01C	23902837	Socket 4P

LOCATION NUMBER	PART NUMBER	DESCRIPTION
U001A	70391334	Screw 3x8mm
U501A	70391334	Screw 3x8mm
UF01A	72471082	Screw, 3x10mm
UX01A	72471082	Screw, 3x10mm
UX03A	72471082	Screw, 3x10mm
V002A	72471082	Screw, 3x10mm
V801A	72471082	Screw, 3x10mm
VF01	70843753	Terminal Board
VF01A	72471082	Screw, 3x10mm
VV01A	70391434	Screw 2. 6x6mm
W601	70175015	Wire FFC, 24P, L110
W851B	23712306	Screw 3x0. 5x6mm
WF51A	23712306	Screw 3x0. 5x6mm
W101	70178965	Wire FFC, 10P, 80mm
Y101	70971480	Owners Manual, German
Y104	70933070	Cover
Y105	23364494	ANT Cable, PAL
Y106	70148853	Remote Control Unit
ZT01	23153736	Resonator, CSB455EB20

LOCATION NUMBER	PART NUMBER	DESCRIPTION
DIFFERENCE LIST		
V703T		
A101	70884265	Front Panel
A103A	70868588	Cassette Door
A701	70917763	Case
H002	70123438	RF Modulator MSD254X1
P801	23176907	Power Cord
W851B	-----	Not Used
Y101	70971473	Owners Manual, E/I
Y106	70148854	Remote Control Unit
V703W		
A101	70884273	Front Panel
A103A	70868597	Cassette Door
A701	70917775	Case
P801	23176907	Power Cord
VF01	70843773	Terminal Board
W851B	-----	Not Used
Y101	70971484	Owners Manual, E/S/FI
Y106	70148855	Remote Control Unit

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
- ELECTRICAL PARTS -			
U001	70187907	P C Board Assy	Main
- INTEGRATED CIRCUITS -			
IC501	70129175	IC	TMP90CH42EF-3601(Z
IC503	B0384053	IC	TA8789AF
IC601	B0320660	IC	TA7291P
IC831	70135106	IC	STK5383
IC833	23318768	IC	AN7809F
IC834	23319871	IC	PQ12RF1
ICX91	70153052	IC	LQT60X1
ICX92	70128386	IC	PST572C
- TRANSISTORS -			
Q081	A6335477	Transistor, Chip	2SC2712-Y
Q082	A6546320	Transistor	2SA1297GR
Q083	A6546320	Transistor	2SA1297GR
Q084	A6546320	Transistor	2SA1297GR
Q085	A6004020	Transistor, Chip	RN1402
Q086	A6014010	Transistor, Chip	RN2401
Q087	A6541130	Transistor, Chip	2SA1162-Y
Q091	A6357139	Transistor, Chip	2SC3125
Q092	A6004020	Transistor, Chip	RN1402
Q510	A6541130	Transistor, Chip	2SA1162-Y
Q511	A6004040	Transistor, Chip	RN1404
Q512	A6335477	Transistor, Chip	2SC2712-Y
Q516	A6541130	Transistor, Chip	2SA1162-Y
Q517	A6004040	Transistor, Chip	RN1404
Q518	A6004040	Transistor, Chip	RN1404
Q519	A6541130	Transistor, Chip	2SA1162-Y
Q520	A6335580	Transistor, Chip	2SC2714-Y
Q610	A6541130	Transistor, Chip	2SA1162-Y
Q611	A6004040	Transistor, Chip	RN1404
Q613	A6335477	Transistor, Chip	2SC2712-Y
Q614	A6004040	Transistor, Chip	RN1404
Q681	A6533247	Transistor	2SA966-Y
Q682	A6541130	Transistor, Chip	2SA1162-Y
Q683	A6335477	Transistor, Chip	2SC2712-Y
Q685	A6533247	Transistor	2SA966-Y
Q686	A6541130	Transistor, Chip	2SA1162-Y
Q688	A6533247	Transistor	2SA966-Y
Q771	A6319311	Transistor	2SC1959-Y
Q772	A6319311	Transistor	2SC1959-Y
Q773	A6335477	Transistor, Chip	2SC2712-Y
Q101	70114403	Transistor, Photo	PT493F
Q102	70114403	Transistor, Photo	PT493F
QY01	A6534145	Transistor	2SA1020-Y
QY02	A6004020	Transistor, Chip	RN1402
- DIODES -			
D081	A7118215	Diode, Zener	04AZ33Y
D082	23118041	Diode, Chip	MA111
D083	23118041	Diode, Chip	MA111
D503	23118041	Diode, Chip	MA111
D504	23118041	Diode, Chip	MA111
D505	A7116925	Diode, Zener	04AZ9.1Z
D601	23118347	Diode, Chip, Zener	RD4.3MB1
D961	23118041	Diode, Chip	MA111
D101	70115450	Diode, LED	GL451V
DY01	23118486	Diode	ERA15-02
- COILS -			
L082	23238710	Coil, Peaking	TRF4220AJ
L083	23238710	Coil, Peaking	TRF4220AJ
L090	23245822	Coil, Chip	TRF41ROC
L091	70131039	Filter, ZBF503D-00	
L501	70131060	Filter	ZBF253D-00F
L771	23289331	Coil, Peaking	TRF4331AF
L831	23289470	Coil, Peaking	TRF4470AF
L833	23289470	Coil, Peaking	TRF4470AF
L834	23289470	Coil, Peaking	TRF4470AF
- CAPACITORS -			
C071	24794220	Cap, Electrolytic	22MF M 16V
C072	24287103	Cap, Chip	0.01MF Z 50V
C073	24763101	Cap, Electrolytic	100MF M 16V
C074	24814103	Cap, Chip	0.01MF Z 50V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C075	24203220	Cap, Electrolytic	22MF	M 16V
C076	24814103	Cap, Chip	0.01MF	Z 50V
C077	24814103	Cap, Chip	0.01MF	Z 50V
C079	24669470	Cap, Electrolytic	47MF	M 50V
C081	24206229	Cap, Electrolytic	2.2MF	M 50V
C082	24206229	Cap, Electrolytic	2.2MF	M 50V
C083	24814103	Cap, Chip	0.01MF	Z 50V
C092	24744220	Cap, Electrolytic	22MF	M 16V
C093	24814103	Cap, Chip	0.01MF	Z 50V
C094	24814103	Cap, Chip	0.01MF	Z 50V
C095	24814103	Cap, Chip	0.01MF	Z 50V
C180	24815562	Cap, Chip	5600PF	K 50V
C501	24630864	Cap, Electrolytic	100MF	M 6.3V
C504	24630019	Cap, Electrolytic	10MF	M 6.3V
C505	24774180	Cap, Chip	18PF	J 50V
C506	24774180	Cap, Chip	18PF	J 50V
C507	24781102	Cap, Chip	1000PF	J 50V
C508	24781102	Cap, Chip	1000PF	J 50V
C509	24815103	Cap, Chip	0.01MF	K 50V
C510	24815103	Cap, Chip	0.01MF	K 50V
C511	24630850	Cap, Electrolytic	47MF	M 16V
C513	24630022	Cap, Electrolytic	10MF	M 10V
C514	24815103	Cap, Chip	0.01MF	K 50V
C520	24092293	Cap, Chip	0.1MF	Z 25V
C521	24630858	Cap, Electrolytic	47MF	M 10V
C522	24781181	Cap, Chip	180PF	J 50V
C523	24630866	Cap, Electrolytic	47MF	M 6.3V
C524	24781181	Cap, Chip	180PF	J 50V
C525	24630866	Cap, Electrolytic	47MF	M 6.3V
C526	24630019	Cap, Electrolytic	10MF	M 6.3V
C527	24630034	Cap, Electrolytic	1MF	M 50V
C528	24630034	Cap, Electrolytic	1MF	M 50V
C529	24815103	Cap, Chip	0.01MF	K 50V
C530	24815103	Cap, Chip	0.01MF	K 50V
C531	24285222	Cap, Chip	2200PF	K 50V
C532	24095650	Cap, Plastic	0.1MF	J 50V
C533	24630868	Cap, Electrolytic	22MF	M 6.3V
C534	24630866	Cap, Electrolytic	47MF	M 6.3V
C535	24815681	Cap, Chip	680PF	K 50V
C536	24781560	Cap, Chip	56PF	J 50V
C537	24630035	Cap, Electrolytic	2.2MF	M 50V
C538	24815103	Cap, Chip	0.01MF	K 50V
C539	24815221	Cap, Chip	220PF	K 50V
C540	24815222	Cap, Chip	2200PF	K 50V
C541	24092293	Cap, Chip	0.1MF	Z 25V
C548	24815102	Cap, Chip	1000PF	K 50V
C582	24285104	Cap, Chip	0.1MF	K 50V
C583	24092288	Cap, Chip	0.12MF	K 25V
C601	24630850	Cap, Electrolytic	47MF	M 16V
C602	24092293	Cap, Chip	0.1MF	Z 25V
C607	24630868	Cap, Electrolytic	22MF	M 6.3V
C608	24814103	Cap, Chip	0.01MF	Z 50V
C613	24814102	Cap, Chip	1000PF	Z 50V
C620	24092293	Cap, Chip	0.1MF	Z 25V
C681	24201470	Cap, Electrolytic	47MF	M 6.3V
C682	24201330	Cap, Electrolytic	33MF	M 6.3V
C683	24201220	Cap, Electrolytic	22MF	M 6.3V
C771	24630850	Cap, Electrolytic	47MF	M 16V
C772	24285103	Cap, Chip	0.01MF	K 50V
C773	24095698	Cap, Plastic	4700PF	J 50V
C774	24095646	Cap, Plastic	0.047MF	J 50V
C775	24082049	Cap, Plastic	0.047MF	J 100V
C776	24630025	Cap, Electrolytic	10MF	M 50V
C831	24794220	Cap, Electrolytic	22MF	M 16V
C832	24794220	Cap, Electrolytic	22MF	M 16V
C833	24797330	Cap, Electrolytic	33MF	M 50V
C834	24793101	Cap, Electrolytic	100MF	M 10V
C835	24797330	Cap, Electrolytic	33MF	M 50V
C841	24747109	Cap, Electrolytic	1MF	M 50V
C842	24747108	Cap, Electrolytic	0.1MF	M 50V
C843	24747109	Cap, Electrolytic	1MF	M 50V
C844	24745470	Cap, Electrolytic	47MF	M 25V
C845	24287104	Cap, Chip	0.1MF	Z 50V
C101	24814103	Cap, Chip	0.01MF	Z 50V
C102	24814103	Cap, Chip	0.01MF	Z 50V

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CK43	24206010	Cap, Electrolytic	1MF	M 50V	R542	24871333	Res, Chip	33K	J 1/8W
CK70	24205479	Cap, Electrolytic	4. 7MF	M 35V	R543	24871224	Res, Chip	220K	J 1/8W
CM70	24205479	Cap, Electrolytic	4. 7MF	M 35V	R560	24872101	Res, Chip	100	J 1/16W
CM73	24206010	Cap, Electrolytic	1MF	M 50V	R561	24872472	Res, Chip	4. 7K	J 1/16W
CX99	24792102	Cap, Electrolytic	1000MF	M 6. 3V	R562	24871102	Res, Chip	1K	J 1/8W
CY01	24203470	Cap, Electrolytic	47MF	M 16V	R563	24872102	Res, Chip	1K	J 1/16W
		- RESISTORS -			R564	24872102	Res, Chip	1K	J 1/16W
R047	24872562	Res, Chip	5. 6K	J 1/16W	R565	24872102	Res, Chip	1K	J 1/16W
R049	24872391	Res, Chip	390	J 1/16W	R566	24872102	Res, Chip	1K	J 1/16W
R063	24000576	Chip Jumper			R567	24872102	Res, Chip	1K	J 1/16W
R064	24000576	Chip Jumper			R568	24872102	Res, Chip	1K	J 1/16W
R065	24000576	Chip Jumper			R569	24872102	Res, Chip	1K	J 1/16W
R066	24000824	Chip Jumper			R583	24872151	Res, Chip	150	J 1/16W
R067	24000576	Chip Jumper			R584	24872103	Res, Chip	10K	J 1/16W
R068	24000576	Chip Jumper			R585	24872123	Res, Chip	12K	J 1/16W
R069	24000576	Chip Jumper			R586	24872102	Res, Chip	1K	J 1/16W
R071	24872472	Res, Chip	4. 7K	J 1/16W	R591	24871222	Res, Chip	2. 2K	J 1/8W
R073	24872472	Res, Chip	4. 7K	J 1/16W	R601	24871222	Res, Chip	2. 2K	J 1/8W
R075	24871472	Res, Chip	4. 7K	J 1/8W	R602	24872512	Res, Chip	5. 1K	J 1/16W
R076	24871472	Res, Chip	4. 7K	J 1/8W	R603	24872133	Res, Chip	13K	J 1/16W
R077	24871472	Res, Chip	4. 7K	J 1/8W	R604	24872103	Res, Chip	10K	J 1/16W
R078	24871562	Res, Chip	5. 6K	J 1/8W	R605	24872223	Res, Chip	22K	J 1/16W
R079	24872820	Res, Chip	82	J 1/16W	R606	24872472	Res, Chip	4. 7K	J 1/16W
R080	24000824	Chip Jumper			R607	24871221	Res, Chip	220	J 1/8W
R081	24871681	Res, Chip	680	J 1/8W	R608	24872102	Res, Chip	1K	J 1/16W
R082	24871681	Res, Chip	680	J 1/8W	R609	24872472	Res, Chip	4. 7K	J 1/16W
R083	24872103	Res, Chip	10K	J 1/16W	R610	24872473	Res, Chip	47K	J 1/16W
R084	24871152	Res, Chip	1. 5K	J 1/8W	R611	24872222	Res, Chip	2. 2K	J 1/16W
R085	24872103	Res, Chip	10K	J 1/16W	R612	24872223	Res, Chip	22K	J 1/16W
R086	24000576	Chip Jumper			R617	24872103	Res, Chip	10K	J 1/16W
R088	24871221	Res, Chip	220	J 1/8W	R618	24872102	Res, Chip	1K	J 1/16W
R089	24872102	Res, Chip	1K	J 1/16W	R619	24872222	Res, Chip	2. 2K	J 1/16W
R090	24000576	Chip Jumper			R620	24872103	Res, Chip	10K	J 1/16W
R092	24871202	Res, Chip	2K	J 1/8W	R622	24872103	Res, Chip	10K	J 1/16W
R093	24871202	Res, Chip	2K	J 1/8W	R625	24872103	Res, Chip	10K	J 1/16W
R095	24000576	Chip Jumper			R626	24872103	Res, Chip	10K	J 1/16W
R096	24872472	Res, Chip	4. 7K	J 1/16W	R628	24871472	Res, Chip	4. 7K	J 1/8W
R097	24872222	Res, Chip	2. 2K	J 1/16W	R632	24871472	Res, Chip	4. 7K	J 1/8W
R098	24871221	Res, Chip	220	J 1/8W	R633	24871472	Res, Chip	4. 7K	J 1/8W
R099	24871221	Res, Chip	220	J 1/8W	R635	24872472	Res, Chip	4. 7K	J 1/16W
R183	24000576	Chip Jumper			R636	24872472	Res, Chip	4. 7K	J 1/16W
R184	24000576	Chip Jumper			R661	24872102	Res, Chip	1K	J 1/16W
R185	24000576	Chip Jumper			R663	24872102	Res, Chip	1K	J 1/16W
R501	24872102	Res, Chip	1K	J 1/16W	R664	24872102	Res, Chip	1K	J 1/16W
R502	24872183	Res, Chip	18K	J 1/16W	R665	24872102	Res, Chip	1K	J 1/16W
R507	24872473	Res, Chip	47K	J 1/16W	R667	24872102	Res, Chip	1K	J 1/16W
R508	24872473	Res, Chip	47K	J 1/16W	R669	24872103	Res, Chip	10K	J 1/16W
R509	24872114	Res, Chip	110K	J 1/16W	R671	24872102	Res, Chip	1K	J 1/16W
R510	24872114	Res, Chip	110K	J 1/16W	R674	24872472	Res, Chip	4. 7K	J 1/16W
R512	24872472	Res, Chip	4. 7K	J 1/16W	R677	24872472	Res, Chip	4. 7K	J 1/16W
R513	24871472	Res, Chip	4. 7K	J 1/8W	R679	24871182	Res, Chip	1. 8K	J 1/8W
R514	24872562	Res, Chip	5. 6K	J 1/16W	R681	24872103	Res, Chip	10K	J 1/16W
R515	24872103	Res, Chip	10K	J 1/16W	R682	24872103	Res, Chip	10K	J 1/16W
R516	24872152	Res, Chip	1. 5K	J 1/16W	R683	24871272	Res, Chip	2. 7K	J 1/8W
R517	24872912	Res, Chip	9. 1K	J 1/16W	R684	24872621	Res, Chip	620	J 1/16W
R518	24871103	Res, Chip	10K	J 1/8W	R685	24871102	Res, Chip	1K	J 1/8W
R519	24872163	Res, Chip	16K	J 1/16W	R686	24872183	Res, Chip	18K	J 1/16W
R521	24872473	Res, Chip	47K	J 1/16W	R687	24871102	Res, Chip	1K	J 1/8W
R522	24872333	Res, Chip	33K	J 1/16W	R688	24872272	Res, Chip	2. 7K	J 1/16W
R523	24871102	Res, Chip	1K	J 1/8W	R689	24872621	Res, Chip	620	J 1/16W
R524	24872333	Res, Chip	33K	J 1/16W	R690	24871102	Res, Chip	1K	J 1/8W
R525	24871102	Res, Chip	1K	J 1/8W	R762	24000824	Chip Jumper		
R526	24872472	Res, Chip	4. 7K	J 1/16W	R772	24871393	Res, Chip	39K	J 1/8W
R527	24872472	Res, Chip	4. 7K	J 1/16W	R773	24872101	Res, Chip	100	J 1/16W
R528	24872472	Res, Chip	4. 7K	J 1/16W	R774	24871629	Res, Chip	6. 2	J 1/8W
R529	24872472	Res, Chip	4. 7K	J 1/16W	R776	24872103	Res, Chip	10K	J 1/16W
R530	24872472	Res, Chip	4. 7K	J 1/16W	R779	24871629	Res, Chip	6. 2	J 1/8W
R531	24871224	Res, Chip	220K	J 1/8W	R833	24871301	Res, Chip	300	J 1/8W
R532	24871513	Res, Chip	51K	J 1/8W	R967	24871104	Res, Chip	100K	J 1/8W
R533	24872183	Res, Chip	18K	J 1/16W	R971	24872182	Res, Chip	1. 8K	J 1/16W
R535	24872513	Res, Chip	51K	J 1/16W	R972	24872472	Res, Chip	4. 7K	J 1/16W
R536	24872621	Res, Chip	620	J 1/16W	R101	24872303	Res, Chip	30K	J 1/16W
R537	24872393	Res, Chip	39K	J 1/16W	R102	24872223	Res, Chip	22K	J 1/16W
R538	24872394	Res, Chip	390K	J 1/16W	R103	24871241	Res, Chip	240	J 1/8W
R540	24871684	Res, Chip	680K	J 1/8W	R106	24872222	Res, Chip	2. 2K	J 1/16W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RI07	24872302	Res, Chip	3K	J 1/16W
RI08	24872182	Res, Chip	1.8K	J 1/16W
RI11	24872562	Res, Chip	5.6K	J 1/16W
RI12	24872562	Res, Chip	5.6K	J 1/16W
RI13	24872562	Res, Chip	5.6K	J 1/16W
RI14	24872562	Res, Chip	5.6K	J 1/16W
RI15	24871361	Res, Chip	360	J 1/8W
RI18	24871361	Res, Chip	360	J 1/8W
RJ51	24000824	Chip Jumper		
RK71	24872222	Res, Chip	2.2K	J 1/16W
RK72	24872472	Res, Chip	4.7K	J 1/16W
RM71	24872222	Res, Chip	2.2K	J 1/16W
RM72	24872472	Res, Chip	4.7K	J 1/16W
RX60	24872471	Res, Chip	470	J 1/16W
RX61	24872102	Res, Chip	1K	J 1/16W
RX62	24872102	Res, Chip	1K	J 1/16W
RX65	24872102	Res, Chip	1K	J 1/16W
RX66	24872102	Res, Chip	1K	J 1/16W
RX67	24872102	Res, Chip	1K	J 1/16W
RX68	24872103	Res, Chip	10K	J 1/16W
RX69	24872102	Res, Chip	1K	J 1/16W
RX91	24872472	Res, Chip	4.7K	J 1/16W
RY01	24871103	Res, Chip	10K	J 1/8W
RY02	24871302	Res, Chip	3K	J 1/8W
RY03	24871302	Res, Chip	3K	J 1/8W
RY04	24871302	Res, Chip	3K	J 1/8W
RY05	24871102	Res, Chip	1K	J 1/8W
		- MISCELLANEOUS -		
P601	23902803	Socket	24P	
P904A	23368543	Connector	15P	
P905A	23368269	Plug	20P	
Q833B	70391355	Screw	3x8mm	
SI01	23344089	Push Switch, 1C1P		
SI02	23344089	Push Switch, 1C1P		
T771	23224341	Ciol	TLN1086D	
W201	70175010	Wire	FFC, 14P, L90	
W201A	23902365	Connector FFC	14P	
W501	70175012	Wire	FFC, 18P, L70	
W501A	23902369	Connector, FFC 18P		
W703	70179950	Wire		
W703A	23902367	Connector (FFC)		
X501	23153364	Crystal		
△Z181	23118122	IC Protector, ICP-N5		
△Z182	23118369	IC Protector	ICP-N15	
△Z681	23118122	IC Protector, ICP-N5		
△Z682	23118132	IC Protector	ICP-N10	
△Z683	23144482	IC Protector	PRF1250	
△Z771	23118122	IC Protector, ICP-N5		
△Z831	23118132	IC Protector	ICP-N10	
Z832	23107555	DC-DC Converter		
△ZX10	23118122	IC Protector, ICP-N5		
Z090	70137220	F. U.	1F-MPX-G03	
ZI11	70128691	Photo Interrupter	TCST5123	
ZI12	70128691	Photo Interrupter	TCST5123	
ZI13	70128692	Photo Interrupter	TCST5133	
ZI14	70128692	Photo Interrupter	TCST5133	
■U201	70187814	P C Board Assy	Video CTL	
		- INTEGRATED CIRCUITS -		
IC201	B0384830	IC	TA8886N	
IC202	B0589980	IC	TL8839P	
		- TRANSISTORS -		
Q101	A6335477	Transistor, Chip	2SC2712-Y	
Q102	A6541130	Transistor, Chip	2SA1162-Y	
Q103	A6335477	Transistor, Chip	2SC2712-Y	
Q104	A6541130	Transistor, Chip	2SA1162-Y	
Q105	A6335477	Transistor, Chip	2SC2712-Y	
Q106	A6004040	Transistor, Chip	RN1404	
Q107	A6335477	Transistor, Chip	2SC2712-Y	
Q108	A6335477	Transistor, Chip	2SC2712-Y	
Q110	A6541130	Transistor, Chip	2SA1162-Y	
Q111	A6004040	Transistor, Chip	RN1404	
Q114	A6541130	Transistor, Chip	2SA1162-Y	
Q116	A6014040	Transistor, Chip	RN2404	
Q117	A6335477	Transistor, Chip	2SC2712-Y	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
Q118	A6004020	Transistor, Chip	RN1402	
Q119	A6004040	Transistor, Chip	RN1404	
Q203	A6541130	Transistor, Chip	2SA1162-Y	
Q204	A6004040	Transistor, Chip	RN1404	
Q205	A6004040	Transistor, Chip	RN1404	
Q206	A6004040	Transistor, Chip	RN1404	
Q207	A6335477	Transistor, Chip	2SC2712-Y	
Q208	A6541130	Transistor, Chip	2SA1162-Y	
Q211	A6335477	Transistor, Chip	2SC2712-Y	
Q212	A6335477	Transistor, Chip	2SC2712-Y	
Q213	A6541130	Transistor, Chip	2SA1162-Y	
Q215	A6541130	Transistor, Chip	2SA1162-Y	
Q216	A6541130	Transistor, Chip	2SA1162-Y	
Q291	A6361470	Transistor	2SC3422-Y	
Q401	A6335477	Transistor, Chip	2SC2712-Y	
Q402	A6004040	Transistor, Chip	RN1404	
Q404	A6541130	Transistor, Chip	2SA1162-Y	
Q405	23314317	Transistor, Chip	XN6501	
		- DIODES -		
D291	A7238420	Diode, Zener	02CZ5. 1-Y	
D292	A7150800	Diode	1SS187	
D401	A7150650	Diode	1SS184	
D402	A7150650	Diode	1SS184	
		- COILS -		
L101	23289121	Coil, Peaking	TRF4121AF	
L102	23238708	Coil, Peaking	TRF4330AJ	
L103	23238705	Coil, Peaking	TRF4560AJ	
L105	23238705	Coil, Peaking	TRF4560AJ	
L106	23238710	Coil, Peaking	TRF4220AJ	
L107	23238710	Coil, Peaking	TRF4220AJ	
L108	23289471	Coil, Peaking	TRF4471AF	
L109	23289681	Coil, Peaking	TRF4681AF	
L110	23289221	Coil, Peaking	TRF4221AF	
L111	23289821	Coil, Peaking	TRF4821AF	
L201	23238711	Coil, Peaking	TRF4180AJ	
L202	23238714	Coil, Peaking	TRF4100AJ	
L203	23238704	Coil, Peaking	TRF4680AJ	
L205	23238706	Coil, Peaking	TRF4470AJ	
L206	23238705	Coil, Peaking	TRF4560AJ	
L207	23289470	Coil, Peaking	TRF4470AF	
L208	23238714	Coil, Peaking	TRF4100AJ	
L401	23289150	Coil, Peaking	TRF4150AF	
L402	23238704	Coil, Peaking	TRF4680AJ	
		- CAPACITORS -		
C101	24781471	Cap, Chip	470PF	J 50V
C102	24781121	Cap, Chip	120PF	J 50V
C103	24781560	Cap, Chip	56PF	J 50V
C105	24781050	Cap, Chip	5PF	C 50V
C106	24781270	Cap, Chip	27PF	J 50V
C107	24781120	Cap, Chip	12PF	J 50V
C108	24781120	Cap, Chip	12PF	J 50V
C109	24781470	Cap, Chip	47PF	J 50V
C110	24814103	Cap, Chip	0.01MF	Z 50V
C111	24201470	Cap, Electrolytic	47MF	M 6.3V
C112	24814103	Cap, Chip	0.01MF	Z 50V
C113	24538334	Cap, Plastic	0.33MF	J 50V
C114	24781471	Cap, Chip	470PF	J 50V
C115	24781201	Cap, Chip	200PF	J 50V
C116	24201470	Cap, Electrolytic	47MF	M 6.3V
C117	24814103	Cap, Chip	0.01MF	Z 50V
C119	24794470	Cap, Electrolytic	47MF	M 16V
C120	24287103	Cap, Chip	0.01MF	Z 50V
C121	24781110	Cap, Chip	11PF	J 50V
C125	24814103	Cap, Chip	0.01MF	Z 50V
C127	24814103	Cap, Chip	0.01MF	Z 50V
C202	24092290	Cap, Chip	0.68MF	Z 16V
C203	24781020	Cap, Chip	2PF	C 50V
C204	24781221	Cap, Chip	220PF	J 50V
C205	24781560	Cap, Chip	56PF	J 50V
C206	24203100	Cap, Electrolytic	10MF	M 16V
C207	24092290	Cap, Chip	0.68MF	Z 16V
C208	24092290	Cap, Chip	0.68MF	Z 16V
C209	24814103	Cap, Chip	0.01MF	Z 50V
C210	24792101	Cap, Electrolytic	100MF	M 6.3V
C211	24814103	Cap, Chip	0.01MF	Z 50V



LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C212	24792101	Cap, Electrolytic	100MF	M 6. 3V	R124	24872102	Res, Chip	1K	J 1/16W
C213	24814103	Cap, Chip	0. 01MF	Z 50V	R125	24872222	Res, Chip	2. 2K	J 1/16W
C214	24815103	Cap, Chip	0. 01MF	K 50V	R126	24871821	Res, Chip	820	J 1/8W
C215	24287103	Cap, Chip	0. 01MF	Z 50V	R127	24872332	Res, Chip	3. 3K	J 1/16W
C216	24781680	Cap, Chip	68PF	J 50V	R128	24872332	Res, Chip	3. 3K	J 1/16W
C217	24781560	Cap, Chip	56PF	J 50V	R135	24000824	Chip Jumper		
C219	24781561	Cap, Chip	560PF	J 50V	R136	24872332	Res, Chip	3. 3K	J 1/16W
C222	24085970	Cap, Electrolytic	10MF	M 16V	R138	24872102	Res, Chip	1K	J 1/16W
C223	24206010	Cap, Electrolytic	1MF	M 50V	R139	24871472	Res, Chip	4. 7K	J 1/8W
C224	24205479	Cap, Electrolytic	4. 7MF	M 35V	R140	24872333	Res, Chip	33K	J 1/16W
C225	24205479	Cap, Electrolytic	4. 7MF	M 35V	R141	24872472	Res, Chip	4. 7K	J 1/16W
C226	24206229	Cap, Electrolytic	2. 2MF	M 50V	R142	24872102	Res, Chip	1K	J 1/16W
C227	24814103	Cap, Chip	0. 01MF	Z 50V	R202	24872472	Res, Chip	4. 7K	J 1/16W
C228	24092290	Cap, Chip	0. 68MF	Z 16V	R204	24872472	Res, Chip	4. 7K	J 1/16W
C229	24815153	Cap, Chip	0. 015MF	K 50V	R205	24872821	Res, Chip	820	J 1/16W
C230	24201470	Cap, Electrolytic	47MF	M 6. 3V	R206	24872512	Res, Chip	5. 1K	J 1/16W
C231	24814103	Cap, Chip	0. 01MF	Z 50V	R207	24872103	Res, Chip	10K	J 1/16W
C233	24206010	Cap, Electrolytic	1MF	M 50V	R208	24872102	Res, Chip	1K	J 1/16W
C234	24206478	Cap, Electrolytic	0. 47MF	M 50V	R209	24872102	Res, Chip	1K	J 1/16W
C235	24206010	Cap, Electrolytic	1MF	M 50V	R210	24872222	Res, Chip	2. 2K	J 1/16W
C236	24781100	Cap, Chip	10PF	D 50V	R211	24000824	Chip Jumper		
C237	24781270	Cap, Chip	27PF	J 50V	R212	24872222	Res, Chip	2. 2K	J 1/16W
C238	24781390	Cap, Chip	39PF	J 50V	R213	24872222	Res, Chip	2. 2K	J 1/16W
C239	24814103	Cap, Chip	0. 01MF	Z 50V	R214	24872152	Res, Chip	1. 5K	J 1/16W
C244	24781300	Cap, Chip	30PF	J 50V	R215	24872152	Res, Chip	1. 5K	J 1/16W
C245	24781220	Cap, Chip	22PF	J 50V	R216	24872103	Res, Chip	10K	J 1/16W
C247	24814103	Cap, Chip	0. 01MF	Z 50V	R217	24872241	Res, Chip	240	J 1/16W
C248	24814103	Cap, Chip	0. 01MF	Z 50V	R219	24872102	Res, Chip	1K	J 1/16W
C291	24203220	Cap, Electrolytic	22MF	M 16V	R220	24872102	Res, Chip	1K	J 1/16W
C293	24814103	Cap, Chip	0. 01MF	Z 50V	R221	24872102	Res, Chip	1K	J 1/16W
C401	24205479	Cap, Electrolytic	4. 7MF	M 35V	R222	24872222	Res, Chip	2. 2K	J 1/16W
C402	24815223	Cap, Chip	0. 022MF	K 50V	R223	24872561	Res, Chip	560	J 1/16W
C403	24774470	Cap, Chip	47PF	J 50V	R224	24872152	Res, Chip	1. 5K	J 1/16W
C405	24205479	Cap, Electrolytic	4. 7MF	M 35V	R227	24872564	Res, Chip	560K	J 1/16W
C406	24774100	Cap, Chip	10PF	D 50V	R229	24872103	Res, Chip	10K	J 1/16W
C407	24815222	Cap, Chip	2200PF	K 50V	R230	24872102	Res, Chip	1K	J 1/16W
C408	24206010	Cap, Electrolytic	1MF	M 50V	R231	24871103	Res, Chip	10K	J 1/8W
C409	24781151	Cap, Chip	150PF	J 50V	R232	24872152	Res, Chip	1. 5K	J 1/16W
C410	24814103	Cap, Chip	0. 01MF	Z 50V	R233	24872474	Res, Chip	470K	J 1/16W
C411	24814103	Cap, Chip	0. 01MF	Z 50V	R234	24872102	Res, Chip	1K	J 1/16W
C413	24092291	Cap, Chip	1MF	Z 16V	R235	24872821	Res, Chip	820	J 1/16W
C414	24814683	Cap, Chip	0. 068MF	Z 50V	R236	24872222	Res, Chip	2. 2K	J 1/16W
C415	24201101	Cap, Electrolytic	100MF	M 6. 3V	R237	24871681	Res, Chip	680	J 1/8W
C416	24092291	Cap, Chip	1MF	Z 16V	R241	24872102	Res, Chip	1K	J 1/16W
C418	24781470	Cap, Chip	47PF	J 50V	R242	24000576	Chip Jumper		
C419	24285563	Cap, Chip	0. 056MF	K 50V	R244	24871223	Res, Chip	22K	J 1/8W
C421	24287103	Cap, Chip	0. 01MF	Z 50V	R251	24066951	Res, Variable	20K	
C422	24287103	Cap, Chip	0. 01MF	Z 50V	R252	24066951	Res, Variable	20K	
C424	24781100	Cap, Chip	10PF	D 50V	R255	24066954	Res, Variable	2K	
C425	24814103	Cap, Chip	0. 01MF	Z 50V	R256	24066952	Res, Variable	10K	
C426	24287103	Cap, Chip	0. 01MF	Z 50V	R257	24066941	Res, Variable	2K	
C451	24093962	Cap, Variable	20PF	Z 50V	R291	24871821	Res, Chip	820	J 1/8W
- RESISTORS -					R292	24871821	Res, Chip	820	J 1/8W
R101	24871152	Res, Chip	1. 5K	J 1/8W	R301	24000576	Chip Jumper		
R102	24872332	Res, Chip	3. 3K	J 1/16W	R302	24000576	Chip Jumper		
R103	24872332	Res, Chip	3. 3K	J 1/16W	R303	24000576	Chip Jumper		
R104	24872821	Res, Chip	820	J 1/16W	R304	24000576	Chip Jumper		
R105	24872102	Res, Chip	1K	J 1/16W	R305	24000576	Chip Jumper		
R106	24872102	Res, Chip	1K	J 1/16W	R306	24000576	Chip Jumper		
R107	24872271	Res, Chip	270	J 1/16W	R307	24000576	Chip Jumper		
R108	24872682	Res, Chip	6. 8K	J 1/16W	R308	24000576	Chip Jumper		
R109	24872561	Res, Chip	560	J 1/16W	R314	24000576	Chip Jumper		
R110	24872821	Res, Chip	820	J 1/16W	R315	24000576	Chip Jumper		
R111	24872681	Res, Chip	680	J 1/16W	R316	24000824	Chip Jumper		
R112	24872561	Res, Chip	560	J 1/16W	R317	24000576	Chip Jumper		
R113	24872152	Res, Chip	1. 5K	J 1/16W	R318	24000576	Chip Jumper		
R114	24872152	Res, Chip	1. 5K	J 1/16W	R401	24871471	Res, Chip	470	J 1/8W
R115	24872152	Res, Chip	1. 5K	J 1/16W	R402	24872102	Res, Chip	1K	J 1/16W
R116	24872101	Res, Chip	100	J 1/16W	R403	24872153	Res, Chip	15K	J 1/16W
R117	24872102	Res, Chip	1K	J 1/16W	R404	24872103	Res, Chip	10K	J 1/16W
R118	24872681	Res, Chip	680	J 1/16W	R405	24872332	Res, Chip	3. 3K	J 1/16W
R119	24872123	Res, Chip	12K	J 1/16W	R406	24872102	Res, Chip	1K	J 1/16W
R120	24872123	Res, Chip	12K	J 1/16W	R407	24872222	Res, Chip	2. 2K	J 1/16W
R121	24872182	Res, Chip	1. 8K	J 1/16W	R408	24871101	Res, Chip	100	J 1/8W
R122	24872681	Res, Chip	680	J 1/16W	R409	24872221	Res, Chip	220	J 1/16W

LOCATION NUMBER	PART NUMBER	DESCRIPTION			
R412	24872472	Res, Chip	4. 7K	J 1/16W	
R413	24871223	Res, Chip	22K	J 1/8W	
R418	24872102	Res, Chip	1K	J 1/16W	
R419	24872271	Res, Chip	270	J 1/16W	
R420	24872152	Res, Chip	1. 5K	J 1/16W	
R421	24872103	Res, Chip	10K	J 1/16W	
R422	24872153	Res, Chip	15K	J 1/16W	
R424	24872821	Res, Chip	820	J 1/16W	
R425	24872821	Res, Chip	820	J 1/16W	
R426	24872152	Res, Chip	1. 5K	J 1/16W	
R451	24066953	Res, Variable	5K		
- MISCELLANEOUS -					
W101	70175013	Wire	FFC, 11P, L40		
W101A	23902362	FFC	11P, 1. 25mm		
X401	23153979	Crystal, 4. 43MHz			
X402	70138138	Filter	EFDBLA13A2		
Z201	23107631	Filter, 3. 2MHz, TLC1126N			
■U802	70187908	P C Board Assy	Power		
- INTEGRATED CIRCUITS -					
△IC803	70135619	IC, Hybrid	STRD6202		
△IC804	A8645130	IC	TLP721		
IC821	23318653	IC	UPC1093J		
- TRANSISTORS -					
Q832	23314141	Transistor	2SC3852		
- DIODES -					
D803	23316381	Diode	RU1P		
△D804	23316711	Diode	SIWBA60		
△D821	23316463	Diode	RK46		
△D822	23316463	Diode	RK46		
D823	23118056	Diode	AG01		
- COILS -					
L810	23103961	Coil, Choke	2BF253D-01		
L821	70211045	Coil, Choke			
L822	70211045	Coil, Choke			
- CAPACITORS -					
△C801	24082318	Cap, Plastic	0. 1MF	M 250V	
△C802	24092453	Cap, Ceramic	220PF	K 400V	
△C803	24092453	Cap, Ceramic	220PF	K 400V	
△C804	24082033	Cap, Plastic	0. 047MF	M 250V	
△C805	24086044	Cap, Electrolytic	47MF	M 450V	
△C817	24640014	Cap, Electrolytic	0. 47MF	M 200V	
△C818	24215221	Cap, Ceramic	220PF	K 1KV	
△C819	24092457	Cap, Ceramic	2200PF	M 400V	
C820	24538333	Cap, Plastic	0. 033MF	J 50V	
△C821	24617892	Cap, Electrolytic	2200MF	M 16V	
C822	24666331	Cap, Electrolytic	330MF	M 16V	
△C823	24617931	Cap, Electrolytic	1200MF	M 10V	
C824	24665221	Cap, Electrolytic	220MF	M 10V	
C825	24617945	Cap, Electrolytic	220MF	M 10V	
C826	24538224	Cap, Plastic	0. 22MF	J 50V	
- RESISTORS -					
△R805	24321568	Res, Oxide Metal	0. 56	J 1/2W	
R816	24366304	Res, Carbon	300K	J 1/6W	
R817	24376184	Res, Carbon	180K	J 1/2W	
R818	24383561	Res, Oxide Metal	560	J 2W	
R822	24367512	Res, Carbon	5. 1K	G 1/6W	
R823	24367112	Res, Carbon	1. 1K	G 1/6W	
R824	24366331	Res, Carbon	330	J 1/6W	
R825	24366102	Res, Carbon	1K	J 1/6W	
R827	24366752	Res, Carbon	7. 5K	J 1/6W	
R835	24366304	Res, Carbon	300K	J 1/6W	
R836	24007487	Res, Cement	2. 2	J 2W	
- MISCELLANEOUS -					
△F801	23144476	Fuse	250V, 2. 5A		
△F801A	23165433	Fuse Holder			
△P803	23902834	Connector	AC Inlet		
Q832B	23712306	Screw	3x0. 5x6mm		
△RF821	24545109	Res, Fusible	1	J 1/4W	
△T801	23211655	Coil, Linefilter	TRF3189		
△T802	70213208	Power Transformer	TPW3268AD		
W851A	23712306	Screw	3x0. 5x6mm		
△Z821	23144480	IC Protector	PRF3150		
△Z822	23144480	IC Protector	PRF3150		

LOCATION NUMBER	PART NUMBER	DESCRIPTION			
■U803	70187909	P C Board Assy	Power CTL		
- TRANSISTORS -					
Q805	A6333346	Transistor	2SC2655-Y		
- DIODES -					
D805	23118056	Diode	AG01		
D806	23118056	Diode	AG01		
D807	23118056	Diode	AG01		
- CAPACITORS -					
C806	24591273	Cap, Plastic	0. 027MF	J 50V	
C807	24538333	Cap, Plastic	0. 033MF	J 50V	
C808	24590472	Cap, Plastic	4700PF	J 50V	
C809	24590472	Cap, Plastic	4700PF	J 50V	
C810	24090022	Cap, Electrolytic	15MF	M 10V	
C811	24538333	Cap, Plastic	0. 033MF	J 50V	
C812	24538224	Cap, Plastic	0. 22MF	J 50V	
C813	24744470	Cap, Electrolytic	47MF	M 16V	
C814	24212471	Cap, Ceramic	470PF	K 50V	
C815	24212471	Cap, Ceramic	470PF	K 50V	
- RESISTORS -					
R804	24366331	Res, Carbon	330	J 1/6W	
R806	24366150	Res, Carbon	15	J 1/6W	
R807	24552151	Res, Oxide Metal	150	J 1/2W	
R808	24366470	Res, Carbon	47	J 1/6W	
R809	24366101	Res, Carbon	100	J 1/6W	
R810	24366331	Res, Carbon	330	J 1/6W	
R811	24366242	Res, Carbon	2. 4K	J 1/6W	
R812	24366242	Res, Carbon	2. 4K	J 1/6W	
R813	24366471	Res, Carbon	470	J 1/6W	
R814	24552201	Res, Oxide Metal	200	J 1/2W	
■U901	70187722	P C Board Assy	HiFi Audio		
- INTEGRATED CIRCUITS -					
IC701	70129343	IC	BA7795LS		
IC920	B0384365	IC	TA8813AN		
- TRANSISTORS -					
Q748	A6335477	Transistor, Chip	2SC2712-Y		
Q926	A6004020	Transistor, Chip	RN1402		
Q927	A6541130	Transistor, Chip	2SA1162-Y		
- DIODES -					
D701	23118041	Diode, Chip	MA111		
D920	23118041	Diode, Chip	MA111		
- COILS -					
L701	23237729	Coil, Peaking	TRF4822AP		
- CAPACITORS -					
C701	24815122	Cap, Chip	1200PF	K 50V	
C702	24815182	Cap, Chip	1800PF	K 50V	
C703	24205479	Cap, Electrolytic	4. 7MF	M 35V	
C704	24781101	Cap, Chip	100PF	J 50V	
C705	24591103	Cap, Plastic	0. 01MF	J 50V	
C706	24794220	Cap, Electrolytic	22MF	M 16V	
C708	24794470	Cap, Electrolytic	47MF	M 16V	
C710	24815103	Cap, Chip	0. 01MF	K 50V	
C713	24205479	Cap, Electrolytic	4. 7MF	M 35V	
C715	24591273	Cap, Plastic	0. 027MF	J 50V	
C716	24591123	Cap, Plastic	0. 012MF	J 50V	
C717	24206010	Cap, Electrolytic	1MF	M 50V	
C719	24794330	Cap, Electrolytic	33MF	M 16V	
C726	24206478	Cap, Electrolytic	0. 47MF	M 50V	
C727	24206478	Cap, Electrolytic	0. 47MF	M 50V	
C728	24206108	Cap, Electrolytic	0. 1MF	M 50V	
C732	24206010	Cap, Electrolytic	1MF	M 50V	
C734	24796479	Cap, Electrolytic	4. 7MF	M 35V	
C735	24815392	Cap, Chip	3900PF	K 50V	
C748	24203100	Cap, Electrolytic	10MF	M 16V	
C920	24794331	Cap, Electrolytic	330MF	M 16V	
C923	24794220	Cap, Electrolytic	22MF	M 16V	
C924	24793101	Cap, Electrolytic	100MF	M 10V	
C925	24781271	Cap, Chip	270PF	J 50V	
C926	24539104	Cap, Plastic	0. 1MF	J 50V	
C927	24794100	Cap, Electrolytic	10MF	M 16V	
C928	24815103	Cap, Chip	0. 01MF	K 50V	
C929	24793101	Cap, Electrolytic	100MF	M 10V	
C930	24539104	Cap, Plastic	0. 1MF	J 50V	
C931	24815103	Cap, Chip	0. 01MF	K 50V	
C932	24814223	Cap, Chip	2200PF	Z 50V	

LOCATION NUMBER	PART NUMBER	DESCRIPTION
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C933	24815103	Cap, Chip	0.01MF	K 50V
C934	24815103	Cap, Chip	0.01MF	K 50V
C935	24794331	Cap, Electrolytic	330MF	M 16V
C936	24539104	Cap, Plastic	0.1MF	J 50V
C977	24205479	Cap, Electrolytic	4.7MF	M 35V
CK01	24815103	Cap, Chip	0.01MF	K 50V
CK02	24815103	Cap, Chip	0.01MF	K 50V
CK03	24796479	Cap, Electrolytic	4.7MF	M 35V
CK04	24794100	Cap, Electrolytic	10MF	M 16V
CK05	24591123	Cap, Plastic	0.012MF	J 50V
CK06	24794100	Cap, Electrolytic	10MF	M 16V
CK07	24591103	Cap, Plastic	0.01MF	J 50V
CK08	24796479	Cap, Electrolytic	4.7MF	M 35V
CK09	24796479	Cap, Electrolytic	4.7MF	M 35V
CK46	24203100	Cap, Electrolytic	10MF	M 16V
CM01	24815103	Cap, Chip	0.01MF	K 50V
CM02	24815103	Cap, Chip	0.01MF	K 50V
CM03	24796479	Cap, Electrolytic	4.7MF	M 35V
CM04	24794100	Cap, Electrolytic	10MF	M 16V
CM05	24591123	Cap, Plastic	0.012MF	J 50V
CM06	24794100	Cap, Electrolytic	10MF	M 16V
CM07	24591103	Cap, Plastic	0.01MF	J 50V
CM08	24796479	Cap, Electrolytic	4.7MF	M 35V
CM09	24796479	Cap, Electrolytic	4.7MF	M 35V
CM46	24203100	Cap, Electrolytic	10MF	M 16V
- RESISTORS -				
R701	24872273	Res, Chip	27K	J 1/16W
R702	24872182	Res, Chip	1.8K	J 1/16W
R703	24872334	Res, Chip	330K	J 1/16W
R704	24872121	Res, Chip	120	J 1/16W
R705	24872123	Res, Chip	12K	J 1/16W
R706	24872392	Res, Chip	3.9K	J 1/16W
R707	24872105	Res, Chip	1M	J 1/16W
R708	24872272	Res, Chip	2.7K	J 1/16W
R709	24872103	Res, Chip	10K	J 1/16W
R716	24872331	Res, Chip	330	J 1/16W
R717	24872820	Res, Chip	82	J 1/16W
R718	24872562	Res, Chip	5.6K	J 1/16W
R719	24872273	Res, Chip	27K	J 1/16W
R723	24872182	Res, Chip	1.8K	J 1/16W
R724	24872183	Res, Chip	18K	J 1/16W
R731	24872153	Res, Chip	15K	J 1/16W
R732	24872332	Res, Chip	3.3K	J 1/16W
R733	24872153	Res, Chip	15K	J 1/16W
R734	24872272	Res, Chip	2.7K	J 1/16W
R737	24871472	Res, Chip	4.7K	J 1/8W
R738	24872103	Res, Chip	10K	J 1/16W
R741	24872472	Res, Chip	4.7K	J 1/16W
R742	24872682	Res, Chip	6.8K	J 1/16W
R743	24872472	Res, Chip	4.7K	J 1/16W
R746	24872103	Res, Chip	10K	J 1/16W
R747	24871223	Res, Chip	22K	J 1/8W
R748	24872473	Res, Chip	47K	J 1/16W
R749	24872822	Res, Chip	8.2K	J 1/16W
R920	24872223	Res, Chip	22K	J 1/16W
R922	24872474	Res, Chip	470K	J 1/16W
R923	24872103	Res, Chip	10K	J 1/16W
R924	24872822	Res, Chip	8.2K	J 1/16W
R925	24872222	Res, Chip	2.2K	J 1/16W
R927	24872102	Res, Chip	1K	J 1/16W
R928	24872222	Res, Chip	2.2K	J 1/16W
R929	24872473	Res, Chip	47K	J 1/16W
R930	24000824	Chip Jumper		
R940	24000576	Chip Jumper		
R941	24000576	Chip Jumper		
R942	24000576	Chip Jumper		
R943	24000576	Chip Jumper		
R952	24066939	Res, Variable	10K	
R980	24000576	Chip Jumper		
R981	24000824	Chip Jumper		
RK01	24872182	Res, Chip	1.8K	J 1/16W
RK02	24872202	Res, Chip	2K	J 1/16W
RK03	24872183	Res, Chip	18K	J 1/16W
RK04	24872202	Res, Chip	2K	J 1/16W
RK05	24872203	Res, Chip	20K	J 1/16W

LOCATION NUMBER	PART NUMBER	DESCRIPTION
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RK06	24872202	Res, Chip	2K	J 1/16W
RK08	24872363	Res, Chip	36K	J 1/16W
RK09	24872202	Res, Chip	2K	J 1/16W
RK10	24872363	Res, Chip	36K	J 1/16W
RK11	24000824	Chip Jumper		
RK49	24872221	Res, Chip	220	J 1/16W
RK54	24066951	Res, Variable	20K	
RM01	24872182	Res, Chip	1.8K	J 1/16W
RM02	24872202	Res, Chip	2K	J 1/16W
RM03	24872183	Res, Chip	18K	J 1/16W
RM04	24872202	Res, Chip	2K	J 1/16W
RM05	24872203	Res, Chip	20K	J 1/16W
RM06	24872202	Res, Chip	2K	J 1/16W
RM08	24872363	Res, Chip	36K	J 1/16W
RM09	24872202	Res, Chip	2K	J 1/16W
RM10	24872363	Res, Chip	36K	J 1/16W
RM11	24000824	Chip Jumper		
RM49	24872221	Res, Chip	220	J 1/16W
RM54	24066951	Res, Variable	20K	
- MISCELLANEOUS -				
P904	23902848	Socket	15P	
P905	23902840	Socket	20P	
W901	70175014	Wire	FFC, 5P, L160	
W901A	23902356	Connector	FFC, 5P, 1.25mm	
ZK02	23107633	Filter, TLC1134N		
ZM02	23107632	Filter, TLC1133N		
UB01	70187851	P C Board Assy	PIF Second	
- INTEGRATED CIRCUITS -				
ICB01	23904262	IC	TDA6620-2	
ICB02	70128100	IC	LA7210	
- TRANSISTORS -				
QB07	A6335477	Transistor, Chip	2SC2712-Y	
QB08	A6335477	Transistor, Chip	2SC2712-Y	
QB09	A6335477	Transistor, Chip	2SC2712-Y	
QB10	A6335477	Transistor, Chip	2SC2712-Y	
QB11	A6541130	Transistor, Chip	2SA1162-Y	
QB13	A6541130	Transistor, Chip	2SA1162-Y	
QB15	A6335477	Transistor, Chip	2SC2712-Y	
QB16	A6004020	Transistor, Chip	RN1402	
QB17	A6335477	Transistor, Chip	2SC2712-Y	
QB18	A6541130	Transistor, Chip	2SA1162-Y	
QB19	A6335477	Transistor, Chip	2SC2712-Y	
QB20	A6335477	Transistor, Chip	2SC2712-Y	
QB21	A6335477	Transistor, Chip	2SC2712-Y	
QB22	A6335477	Transistor, Chip	2SC2712-Y	
- COILS -				
LB51	23262808	Coil, IF	TRF1082	
LB90	23238712	Coil, Peaking	TRF4150AJ	
LB91	23238708	Coil, Peaking	TRF4330AJ	
- CAPACITORS -				
CB01	24206229	Cap, Electrolytic	2.2MF	M 50V
CB02	24815102	Cap, Chip	1000PF	K 50V
CB03	24591822	Cap, Plastic	8200PF	J 50V
CB04	24206010	Cap, Electrolytic	1MF	M 50V
CB05	24206229	Cap, Electrolytic	2.2MF	M 50V
CB06	24591332	Cap, Plastic	3300PF	J 50V
CB07	24085988	Cap, Electrolytic	1MF	M 50V
CB08	24203100	Cap, Electrolytic	10MF	M 16V
CB09	24206010	Cap, Electrolytic	1MF	M 50V
CB10	24206010	Cap, Electrolytic	1MF	M 50V
CB11	24206010	Cap, Electrolytic	1MF	M 50V
CB12	24590332	Cap, Plastic	3300PF	J 50V
CB13	24815681	Cap, Chip	680PF	K 50V
CB14	24206229	Cap, Electrolytic	2.2MF	M 50V
CB15	24206229	Cap, Electrolytic	2.2MF	M 50V
CB16	24815103	Cap, Chip	0.01MF	K 50V
CB17	24203101	Cap, Electrolytic	100MF	M 16V
CB21	24815102	Cap, Chip	1000PF	K 50V
CB22	24815331	Cap, Chip	330PF	K 50V
CB23	24206479	Cap, Electrolytic	4.7MF	M 50V
CB24	24206010	Cap, Electrolytic	1MF	M 50V
CB25	24815102	Cap, Chip	1000PF	K 50V
CB26	24206478	Cap, Electrolytic	0.47MF	M 50V
CB27	24203470	Cap, Electrolytic	47MF	M 16V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CB28	24815103	Cap, Chip	0. 01MF	K 50V
CB29	24815681	Cap, Chip	680PF	K 50V
CB30	24774750	Cap, Chip	75PF	J 50V
CB32	24203100	Cap, Electrolytic	10MF	M 16V
CB90	24774050	Cap, Chip	5PF	C 50V
CB91	24774270	Cap, Chip	27PF	J 50V
CB92	24774560	Cap, Chip	56PF	J 50V
CB93	24774090	Cap, Chip	9PF	D 50V
CB96	24774220	Cap, Chip	22PF	J 50V
- RESISTORS -				
RB01	24872274	Res, Chip	270K	J 1/16W
RB02	24872473	Res, Chip	47K	J 1/16W
RB03	24872472	Res, Chip	4. 7K	J 1/16W
RB04	24872182	Res, Chip	1. 8K	J 1/16W
RB05	24872222	Res, Chip	2. 2K	J 1/16W
RB08	24872102	Res, Chip	1K	J 1/16W
RB11	24872563	Res, Chip	56K	J 1/16W
RB12	24872101	Res, Chip	100	J 1/16W
RB13	24872101	Res, Chip	100	J 1/16W
RB15	24872104	Res, Chip	100K	J 1/16W
RB16	24872563	Res, Chip	56K	J 1/16W
RB17	24000824	Chip Jumper		
RB18	24872562	Res, Chip	5. 6K	J 1/16W
RB23	24872102	Res, Chip	1K	J 1/16W
RB24	24872102	Res, Chip	1K	J 1/16W
RB31	24872153	Res, Chip	15K	J 1/16W
RB32	24872122	Res, Chip	1. 2K	J 1/16W
RB33	24872102	Res, Chip	1K	J 1/16W
RB34	24872221	Res, Chip	220	J 1/16W
RB35	24872334	Res, Chip	330K	J 1/16W
RB36	24872183	Res, Chip	18K	J 1/16W
RB37	24872124	Res, Chip	120K	J 1/16W
RB38	24872332	Res, Chip	3. 3K	J 1/16W
RB39	24872751	Res, Chip	750	J 1/16W
RB40	24872103	Res, Chip	10K	J 1/16W
RB41	24872473	Res, Chip	47K	J 1/16W
RB42	24872563	Res, Chip	56K	J 1/16W
RB43	24872473	Res, Chip	47K	J 1/16W
RB44	24872472	Res, Chip	4. 7K	J 1/16W
RB45	24872101	Res, Chip	100	J 1/16W
RB46	24871241	Res, Chip	240	J 1/8W
RB47	24872102	Res, Chip	1K	J 1/16W
RB51	24066940	Res, Variable	5K	
RB61	24872101	Res, Chip	100	J 1/16W
RB64	24000576	Chip Jumper		
RB65	24872331	Res, Chip	330	J 1/16W
RB66	24872333	Res, Chip	33K	J 1/16W
RB67	24872103	Res, Chip	10K	J 1/16W
RB68	24872123	Res, Chip	12K	J 1/16W
RB69	24872562	Res, Chip	5. 6K	J 1/16W
RB70	24872562	Res, Chip	5. 6K	J 1/16W
RB71	24872333	Res, Chip	33K	J 1/16W
RB72	24872103	Res, Chip	10K	J 1/16W
RB73	24872123	Res, Chip	12K	J 1/16W
RB74	24872562	Res, Chip	5. 6K	J 1/16W
RB75	24872562	Res, Chip	5. 6K	J 1/16W
RB80	24000824	Chip Jumper		
RB81	24000824	Chip Jumper		
RB82	24000824	Chip Jumper		
RB90	24872561	Res, Chip	560	J 1/16W
RB91	24872272	Res, Chip	2. 7K	J 1/16W
- MISCELLANEOUS -				
XB02	23153668	Resonator		
UF01	70187913	P C Board Assy	Terminal/OSP	
- INTEGRATED CIRCUITS -				
ICE01	70129177	IC	M35011-054SP	
ICF01	70119857	IC	BA7021	
ICF02	70128683	IC	BA7611AN	
ICF72	70119686	IC	M5201L	
ICF73	70119686	IC	M5201L	
ICF75	80350410	IC	TA75557S	
- TRANSISTORS -				
QE11	A6541130	Transistor, Chip	2SA1162-Y	
QE12	A6335477	Transistor, Chip	2SC2712-Y	

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
QE20	A6004020	Transistor, Chip	RN1402	
QF04	A6014020	Transistor, Chip	RN2402	
QF05	A6004030	Transistor, Chip	RN1403	
QF06	A6541130	Transistor, Chip	2SA1162-Y	
QF07	A6541130	Transistor, Chip	2SA1162-Y	
QF08	A6541130	Transistor, Chip	2SA1162-Y	
QF09	A6004030	Transistor, Chip	RN1403	
QF10	A6541130	Transistor, Chip	2SA1162-Y	
QF11	A6014020	Transistor, Chip	RN2402	
QF12	A6004030	Transistor, Chip	RN1403	
QF41	A6359860	Transistor, Chip	2SC3326-A	
QF42	A6359860	Transistor, Chip	2SC3326-A	
QF74	A6004040	Transistor, Chip	RN1404	
- DIODES -				
DF01	A7152750	Diode	1SS226	
DF02	A7150650	Diode	1SS184	
DF03	A7150650	Diode	1SS184	
DF04	A7152750	Diode	1SS226	
DF05	A7152750	Diode	1SS226	
DF06	A7152750	Diode	1SS226	
DF07	A7150650	Diode	1SS184	
DF08	A7152750	Diode	1SS226	
DF10	A7152750	Diode	1SS226	
DF43	A7152750	Diode	1SS226	
DF44	A7150500	Diode	1SS181	
DF46	A7152750	Diode	1SS226	
DF47	A7150500	Diode	1SS181	
DF48	23118041	Diode, Chip	MA111	
DF49	23118041	Diode, Chip	MA111	
- COILS -				
LE01	23237985	Coil, Peaking	TRF4150AC	
- CAPACITORS -				
CE01	24206010	Cap, Electrolytic	1MF	M 50V
CE02	24201470	Cap, Electrolytic	47MF	M 6. 3V
CE04	24783330	Cap, Chip	33PF	J 50V
CE05	24783120	Cap, Chip	12PF	J 50V
CE08	24774070	Cap, Chip	7PF	D 50V
CE09	24774080	Cap, Chip	8PF	D 50V
CE20	24814473	Cap, Chip	0. 047MF	Z 50V
CE31	24781101	Cap, Chip	100PF	J 50V
CE32	24781101	Cap, Chip	100PF	J 50V
CE51	24093950	Cap, Variable	30PF	
CF01	24285223	Cap, Chip	0. 022MF	K 50V
CF02	24814103	Cap, Chip	0. 01MF	Z 50V
CF03	24781181	Cap, Chip	180PF	J 50V
CF04	24781560	Cap, Chip	56PF	J 50V
CF05	24202101	Cap, Electrolytic	100MF	M 10V
CF06	24814103	Cap, Chip	0. 01MF	Z 50V
CF07	24814103	Cap, Chip	0. 01MF	Z 50V
CF08	24206010	Cap, Electrolytic	1MF	M 50V
CF09	24814103	Cap, Chip	0. 01MF	Z 50V
CF10	24206010	Cap, Electrolytic	1MF	M 50V
CF11	24203470	Cap, Electrolytic	47MF	M 16V
CF12	24814103	Cap, Chip	0. 01MF	Z 50V
CF13	24206010	Cap, Electrolytic	1MF	M 50V
CF14	24814103	Cap, Chip	0. 01MF	Z 50V
CF15	24206010	Cap, Electrolytic	1MF	M 50V
CF16	24203470	Cap, Electrolytic	47MF	M 16V
CF17	24814103	Cap, Chip	0. 01MF	Z 50V
CF18	24762471	Cap, Electrolytic	470MF	M 10V
CF19	24203470	Cap, Electrolytic	47MF	M 16V
CF20	24206010	Cap, Electrolytic	1MF	M 50V
CF21	24285223	Cap, Chip	0. 022MF	K 50V
CF24	24762471	Cap, Electrolytic	470MF	M 10V
CF26	24203470	Cap, Electrolytic	47MF	M 16V
CF43	24203100	Cap, Electrolytic	10MF	M 16V
CF44	24203220	Cap, Electrolytic	22MF	M 16V
CF62	24203100	Cap, Electrolytic	10MF	M 16V
CF69	24203100	Cap, Electrolytic	10MF	M 16V
CF72	24205479	Cap, Electrolytic	4. 7MF	M 35V
CF73	24205479	Cap, Electrolytic	4. 7MF	M 35V
CF74	24203100	Cap, Electrolytic	10MF	M 16V
CF75	24205479	Cap, Electrolytic	4. 7MF	M 35V
CF76	24205479	Cap, Electrolytic	4. 7MF	M 35V
CF81	24276561	Cap, Chip	560PF	J 50V

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CF83	24814102	Cap, Chip	1000PF	Z 50V	RF83	24872224	Res, Chip	220K	J 1/16W
CF84	24814102	Cap, Chip	1000PF	Z 50V	RF84	24872224	Res, Chip	220K	J 1/16W
CF85	24814102	Cap, Chip	1000PF	Z 50V	RF85	24872103	Res, Chip	10K	J 1/16W
CF86	24814102	Cap, Chip	1000PF	Z 50V	RF86	24872473	Res, Chip	47K	J 1/16W
CF87	24276561	Cap, Chip	560PF	J 50V	RF87	24872103	Res, Chip	10K	J 1/16W
		- RESISTORS -			RF88	24872103	Res, Chip	10K	J 1/16W
RE01	24872221	Res, Chip	220	J 1/16W	RF89	24872473	Res, Chip	47K	J 1/16W
RE02	24872221	Res, Chip	220	J 1/16W	RF90	24872473	Res, Chip	47K	J 1/16W
RE11	24872101	Res, Chip	100	J 1/16W			- MISCELLANEOUS -		
RE12	24872101	Res, Chip	100	J 1/16W	PF01	23116334	Socket, 21P		
RE13	24872681	Res, Chip	680	J 1/16W	PF02	23116334	Socket, 21P		
RE14	24872472	Res, Chip	4. 7K	J 1/16W	PF05	23902812	Socket	14P	
RE31	24872102	Res, Chip	1K	J 1/16W	PF06	23902814	Socket	16P	
RE32	24872102	Res, Chip	1K	J 1/16W	XE01	23153365	Crystal	17. 734475MHz	
RE33	24872102	Res, Chip	1K	J 1/16W	△ZE01	23118122	IC Protector, ICP-N5		
RE34	24872472	Res, Chip	4. 7K	J 1/16W	ZE02	23107748	Filter, TEM1008, 3-470K		
RE36	24872472	Res, Chip	4. 7K	J 1/16W					
RF01	24871751	Res, Chip	750	J 1/8W	■UN01	70187914	P C Board Assy	VPS	
RF02	24872103	Res, Chip	10K	J 1/16W			- INTEGRATED CIRCUITS -		
RF03	24872152	Res, Chip	1. 5K	J 1/16W	ICN01	70128200	IC	SAA4700	
RF04	24872391	Res, Chip	390	J 1/16W			- DIODES -		
RF05	24872331	Res, Chip	330	J 1/16W	DN01	A7160570	Diode	1SS176	
RF06	24872331	Res, Chip	330	J 1/16W			- CAPACITORS -		
RF07	24872392	Res, Chip	3. 9K	J 1/16W	CN01	24591104	Cap, Plastic	0. 1MF	J 50V
RF10	24871102	Res, Chip	1K	J 1/8W	CN02	24591472	Cap, Plastic	4700PF	J 50V
RF11	24871820	Res, Chip	82	J 1/8W	CN03	24474471	Cap, Ceramic	470PF	K 50V
RF12	24871750	Res, Chip	75	J 1/8W	CN04	24474102	Cap, Ceramic	1000PF	K 50V
RF13	24871681	Res, Chip	680	J 1/8W	CN05	24591472	Cap, Plastic	4700PF	J 50V
RF14	24871681	Res, Chip	680	J 1/8W	CN06	24591223	Cap, Plastic	0. 022MF	J 50V
RF15	24871681	Res, Chip	680	J 1/8W	CN07	24794220	Cap, Electrolytic	22MF	M 16V
RF16	24872101	Res, Chip	100	J 1/16W	CN09	24476103	Cap, Ceramic	0. 01MF	N 16V
RF17	24871102	Res, Chip	1K	J 1/8W			- RESISTORS -		
RF18	24871681	Res, Chip	680	J 1/8W	RN01	24366472	Res, Carbon	4. 7K	J 1/6W
RF19	24871681	Res, Chip	680	J 1/8W	RN02	24367753	Res, Carbon	75K	G 1/6W
RF20	24871681	Res, Chip	680	J 1/8W	RN03	24366822	Res, Carbon	8. 2K	J 1/6W
RF21	24872101	Res, Chip	100	J 1/16W	RN04	24366101	Res, Carbon	100	J 1/6W
RF22	24872103	Res, Chip	10K	J 1/16W	RN05	24366101	Res, Carbon	100	J 1/6W
RF23	24872102	Res, Chip	1K	J 1/16W	RN08	24366102	Res, Carbon	1K	J 1/6W
RF24	24872112	Res, Chip	1. 1K	J 1/16W					
RF26	24871750	Res, Chip	75	J 1/8W	■UV01	70187818	P C Board Assy	Pre Amp	
RF27	24872103	Res, Chip	10K	J 1/16W			- INTEGRATED CIRCUITS -		
RF28	24871751	Res, Chip	750	J 1/8W	IC901	B0358220	IC	TA7772P	
RF30	24871102	Res, Chip	1K	J 1/8W	ICV01	B0383063	IC	TA8676F	
RF31	24872102	Res, Chip	1K	J 1/16W			- TRANSISTORS -		
RF32	24000824	Chip Jumper			Q902	A6541130	Transistor, Chip	2SA1162-Y	
RF33	24000824	Chip Jumper			Q903	A6325549	Transistor	2SC2236-Y	
RF34	24872102	Res, Chip	1K	J 1/16W	Q904	A6335477	Transistor, Chip	2SC2712-Y	
RF35	24872102	Res, Chip	1K	J 1/16W	QV11	A6335477	Transistor, Chip	2SC2712-Y	
RF36	24872102	Res, Chip	1K	J 1/16W	QV12	A6541130	Transistor, Chip	2SA1162-Y	
RF41	24872103	Res, Chip	10K	J 1/16W	QV13	A6541130	Transistor, Chip	2SA1162-Y	
RF43	24872104	Res, Chip	100K	J 1/16W	QV14	A6541130	Transistor, Chip	2SA1162-Y	
RF44	24872104	Res, Chip	100K	J 1/16W	QV15	A6541130	Transistor, Chip	2SA1162-Y	
RF45	24871132	Res, Chip	1. 3K	J 1/8W	QV16	A6004040	Transistor, Chip	RN1404	
RF46	24871132	Res, Chip	1. 3K	J 1/8W	QV17	A6004040	Transistor, Chip	RN1404	
RF47	24872473	Res, Chip	47K	J 1/16W			- DIODES -		
RF48	24871132	Res, Chip	1. 3K	J 1/8W	D901	A7150500	Diode	1SS181	
RF49	24871132	Res, Chip	1. 3K	J 1/8W	DV01	A7150500	Diode	1SS181	
RF60	24872473	Res, Chip	47K	J 1/16W	DV02	A7150500	Diode	1SS181	
RF61	24871152	Res, Chip	1. 5K	J 1/8W	DV03	A7152750	Diode	1SS226	
RF62	24871152	Res, Chip	1. 5K	J 1/8W			- COILS -		
RF64	24872104	Res, Chip	100K	J 1/16W	L901	23289109	Coil, Peaking	TRF41ROAF	
RF65	24871132	Res, Chip	1. 3K	J 1/8W	L902	23289109	Coil, Peaking	TRF41ROAF	
RF66	24871132	Res, Chip	1. 3K	J 1/8W	L903	23289560	Coil, Peaking	TRF4560AF	
RF67	24872221	Res, Chip	220	J 1/16W	L904	23289270	Coil, Peaking	TRF4270AF	
RF68	24872221	Res, Chip	220	J 1/16W	LV06	23289271	Coil, Peaking	TRF4271AF	
RF71	24871103	Res, Chip	10K	J 1/8W	LV07	23289820	Coil, Peaking	TRF4820AF	
RF72	24871103	Res, Chip	10K	J 1/8W	LV08	23289330	Coil, Peaking	TRF4330AF	
RF73	24871333	Res, Chip	33K	J 1/8W	LV09	23289180	Coil, Peaking	TRF4180F	
RF75	24872104	Res, Chip	100K	J 1/16W	LV10	23289330	Coil, Peaking	TRF4330AF	
RF76	24871103	Res, Chip	10K	J 1/8W	LV11	23289470	Coil, Peaking	TRF4470AF	
RF78	24871103	Res, Chip	10K	J 1/8W	LV12	23289100	Coil, Peaking	TRF4100AF	
RF79	24872103	Res, Chip	10K	J 1/16W			- CAPACITORS -		
RF80	24872123	Res, Chip	12K	J 1/16W	C901	24630852	Cap, Electrolytic	22MF	M 16V
RF81	24871132	Res, Chip	1. 3K	J 1/8W	C902	24815103	Cap, Chip	0. 01MF	K 50V
RF82	24871132	Res, Chip	1. 3K	J 1/8W	C903	24630034	Cap, Electrolytic	1MF	M 50V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C904	24630034	Cap, Electrolytic	1MF	M 50V
C905	24815103	Cap, Chip	0.01MF	K 50V
C906	24630868	Cap, Electrolytic	22MF	M 6.3V
C907	24815103	Cap, Chip	0.01MF	K 50V
C908	24815103	Cap, Chip	0.01MF	K 50V
C909	24781241	Cap, Chip	240PF	J 50V
C910	24781241	Cap, Chip	240PF	J 50V
C911	24815471	Cap, Chip	470PF	K 50V
C912	24630852	Cap, Electrolytic	22MF	M 16V
C913	24815103	Cap, Chip	0.01MF	K 50V
C915	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV01	24781820	Cap, Chip	82PF	J 50V
CV02	24630034	Cap, Electrolytic	1MF	M 50V
CV03	24815103	Cap, Chip	0.01MF	K 50V
CV06	24815102	Cap, Chip	1000PF	K 50V
CV07	24781050	Cap, Chip	5PF	C 50V
CV08	24815103	Cap, Chip	0.01MF	K 50V
CV09	24630034	Cap, Electrolytic	1MF	M 50V
CV11	24630034	Cap, Electrolytic	1MF	M 50V
CV12	24781820	Cap, Chip	82PF	J 50V
CV13	24815103	Cap, Chip	0.01MF	K 50V
CV14	24781100	Cap, Chip	10PF	D 50V
CV16	24815102	Cap, Chip	1000PF	K 50V
CV18	24815103	Cap, Chip	0.01MF	K 50V
CV19	24630034	Cap, Electrolytic	1MF	M 50V
CV20	24781101	Cap, Chip	100PF	J 50V
CV21	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV22	24630852	Cap, Electrolytic	22MF	M 16V
CV23	24815103	Cap, Chip	0.01MF	K 50V
CV24	24815103	Cap, Chip	0.01MF	K 50V
CV25	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV27	24285103	Cap, Chip	0.01MF	K 50V
CV28	24781271	Cap, Chip	270PF	J 50V
CV29	24781181	Cap, Chip	180PF	J 50V
CV30	24781510	Cap, Chip	51PF	J 50V
CV31	24781120	Cap, Chip	12PF	J 50V
CV32	24815103	Cap, Chip	0.01MF	K 50V
CV33	24630850	Cap, Electrolytic	47MF	M 16V
CV34	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV38	24781101	Cap, Chip	100PF	J 50V
CV40	24630866	Cap, Electrolytic	47MF	M 6.3V
CV41	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV42	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV43	24630866	Cap, Electrolytic	47MF	M 6.3V
CV44	24092178	Cap, Ceramic, Chip	0.1MF	K 25V
CV45	24781050	Cap, Chip	5PF	C 50V
- RESISTORS -				
R900	24872102	Res, Chip	1K	J 1/16W
R901	24872152	Res, Chip	1.5K	J 1/16W
R902	24872152	Res, Chip	1.5K	J 1/16W
R903	24872152	Res, Chip	1.5K	J 1/16W
R904	24872152	Res, Chip	1.5K	J 1/16W
R905	24872472	Res, Chip	4.7K	J 1/16W
R906	24872102	Res, Chip	1K	J 1/16W
R907	24872181	Res, Chip	180	J 1/16W
R908	24872181	Res, Chip	180	J 1/16W
R909	24872821	Res, Chip	820	J 1/16W
R910	24872821	Res, Chip	820	J 1/16W
R911	24872361	Res, Chip	360	J 1/16W
R912	24872181	Res, Chip	180	J 1/16W
R913	24872152	Res, Chip	1.5K	J 1/16W
R914	24872103	Res, Chip	10K	J 1/16W
R915	24000576	Chip Jumper		
R916	24000576	Chip Jumper		
R917	24872152	Res, Chip	1.5K	J 1/16W
R918	24872272	Res, Chip	2.7K	J 1/16W
R919	24872562	Res, Chip	5.6K	J 1/16W
RV01	24872151	Res, Chip	150	J 1/16W
RV04	24872331	Res, Chip	330	J 1/16W
RV05	24872201	Res, Chip	200	J 1/16W
RV06	24872151	Res, Chip	150	J 1/16W
RV08	24000824	Chip Jumper		
RV09	24872331	Res, Chip	330	J 1/16W
RV10	24872101	Res, Chip	100	J 1/16W
RV11	24872472	Res, Chip	4.7K	J 1/16W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RV12	24872472	Res, Chip	4.7K	J 1/16W
RV13	24872472	Res, Chip	4.7K	J 1/16W
RV15	24872272	Res, Chip	2.7K	J 1/16W
RV16	24872822	Res, Chip	8.2K	J 1/16W
RV17	24872122	Res, Chip	1.2K	J 1/16W
RV18	24872102	Res, Chip	1K	J 1/16W
RV19	24872682	Res, Chip	6.8K	J 1/16W
RV20	24872123	Res, Chip	12K	J 1/16W
RV21	24872102	Res, Chip	1K	J 1/16W
RV22	24872102	Res, Chip	1K	J 1/16W
RV23	24872102	Res, Chip	1K	J 1/16W
RV24	24872222	Res, Chip	2.2K	J 1/16W
RV25	24872472	Res, Chip	4.7K	J 1/16W
RV26	24872122	Res, Chip	1.2K	J 1/16W
RV27	24872103	Res, Chip	10K	J 1/16W
RV28	24872270	Res, Chip	27	J 1/16W
RV29	24872562	Res, Chip	5.6K	J 1/16W
RV30	24872473	Res, Chip	47K	J 1/16W
RV31	24872152	Res, Chip	1.5K	J 1/16W
RV32	24872105	Res, Chip	1M	J 1/16W
RV33	24872101	Res, Chip	100	J 1/16W
RV34	24872102	Res, Chip	1K	J 1/16W
RV35	24871680	Res, Chip	68K	J 1/8W
RV36	24872101	Res, Chip	100	J 1/16W
RV37	24872102	Res, Chip	1K	J 1/16W
RV38	24871680	Res, Chip	68K	J 1/8W
RV39	24871393	Res, Chip	39K	J 1/8W
RV40	24872101	Res, Chip	100	J 1/16W
RV51	24066983	Res, Variable	5K	
RV93	24000824	Chip Jumper		
RV94	24000824	Chip Jumper		
RV95	24000576	Chip Jumper		
RV96	24000824	Chip Jumper		
RV97	24000576	Chip Jumper		
RV98	24000576	Chip Jumper		
RV99	24000576	Chip Jumper		
- MISCELLANEOUS -				
P902	23902825	Socket		
PV01	23902790	Socket, 10P		
PV02	23902809	Socket	11P	
■U501	70187912	P C Board Assy	Relay	
- DIODES -				
D580	23316556	Diode	HSM123	
- CAPACITORS -				
C512	24204470	Cap, Electrolytic	47MF	M 25V
C777	24214221	Cap, Ceramic	220PF	K 500V
- RESISTORS -				
R580	24872472	Res, Chip	4.7K	J 1/16W
R752	24066949	Res, Variable	100K	
R778	24872100	Res, Chip	10	J 1/16W
- MISCELLANEOUS -				
P502	23902797	Socket	18P	
P503	23902766	Socket	10P, FPC	
P706	23901508	Socket	7P	
■UX02	70187910	P C Board Assy	Timer	
- INTEGRATED CIRCUITS -				
ICX02	70128387	IC	PST572D	
ICX03	B0491325	IC	TC89101P	
- TRANSISTORS -				
QX05	A6335477	Transistor, Chip	2SC2712-Y	
QX06	A6335477	Transistor, Chip	2SC2712-Y	
QX07	A6335477	Transistor, Chip	2SC2712-Y	
- DIODES -				
DX01	23118041	Diode, Chip	MA111	
DX02	23118041	Diode, Chip	MA111	
DX04	23118041	Diode, Chip	MA111	
DX09	23118041	Diode, Chip	MA111	
DX10	23118041	Diode, Chip	MA111	
DX12	23118041	Diode, Chip	MA111	
DX13	23118041	Diode, Chip	MA111	
DX18	23118041	Diode, Chip	MA111	
DX19	23118041	Diode, Chip	MA111	
DX20	23118041	Diode, Chip	MA111	

LOCATION NUMBER	PART NUMBER	DESCRIPTION
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DX21	23118041	Diode, Chip	MA111	
DX22	23118041	Diode, Chip	MA111	
		- COILS -		
LX01	23289470	Coil, Peaking	TRF4470AF	
		- CAPACITORS -		
CX01	24201101	Cap, Electrolytic	100MF	M 6.3V
CX03	24781100	Cap, Chip	10PF	D 50V
CX04	24781100	Cap, Chip	10PF	D 50V
CX05	24781300	Cap, Chip	30PF	J 50V
CX06	24781300	Cap, Chip	30PF	J 50V
CX07	24814103	Cap, Chip	0.01MF	Z 50V
CX08	24814102	Cap, Chip	1000PF	Z 50V
CX09	24814103	Cap, Chip	0.01MF	Z 50V
CX10	24201101	Cap, Electrolytic	100MF	M 6.3V
CX11	24814103	Cap, Chip	0.01MF	Z 50V
CX12	24814223	Cap, Chip	2200PF	Z 50V
CX13	24781101	Cap, Chip	100PF	J 50V
CX14	24781101	Cap, Chip	100PF	J 50V
CX15	24781101	Cap, Chip	100PF	J 50V
CX16	24781101	Cap, Chip	100PF	J 50V
CX17	24781101	Cap, Chip	100PF	J 50V
CX18	24781101	Cap, Chip	100PF	J 50V
CX19	24781101	Cap, Chip	100PF	J 50V
CX20	24781101	Cap, Chip	100PF	J 50V
		- RESISTORS -		
RX01	24871150	Res, Chip	15	J 1/8W
RX02	24871150	Res, Chip	15	J 1/8W
RX03	24871221	Res, Chip	220	J 1/8W
RX04	24871102	Res, Chip	1K	J 1/8W
RX05	24872223	Res, Chip	22K	J 1/16W
RX06	24872102	Res, Chip	1K	J 1/16W
RX07	24872103	Res, Chip	10K	J 1/16W
RX08	24872103	Res, Chip	10K	J 1/16W
RX09	24871473	Res, Chip	47K	J 1/8W
RX10	24872221	Res, Chip	220	J 1/16W
RX11	24872101	Res, Chip	100	J 1/16W
RX13	24872221	Res, Chip	220	J 1/16W
RX14	24872102	Res, Chip	1K	J 1/16W
RX15	24872221	Res, Chip	220	J 1/16W
RX16	24872221	Res, Chip	220	J 1/16W
RX17	24872221	Res, Chip	220	J 1/16W
RX18	24872472	Res, Chip	4.7K	J 1/16W
RX19	24872472	Res, Chip	4.7K	J 1/16W
RX20	24872472	Res, Chip	4.7K	J 1/16W
RX21	24871221	Res, Chip	220	J 1/8W
RX22	24872472	Res, Chip	4.7K	J 1/16W
RX23	24871101	Res, Chip	100	J 1/8W
RX24	24871102	Res, Chip	1K	J 1/8W
RX25	24872222	Res, Chip	2.2K	J 1/16W
RX26	24871103	Res, Chip	10K	J 1/8W
RX27	24872103	Res, Chip	10K	J 1/16W
RX29	24871271	Res, Chip	270	J 1/8W
RX30	24871100	Res, Chip	10	J 1/8W
RX31	24872102	Res, Chip	1K	J 1/16W
RX32	24872104	Res, Chip	100K	J 1/16W
RX33	24872223	Res, Chip	22K	J 1/16W
RX35	24872223	Res, Chip	22K	J 1/16W
RX36	24872223	Res, Chip	22K	J 1/16W
RX37	24871221	Res, Chip	220	J 1/8W
RX38	24871221	Res, Chip	220	J 1/8W
RX39	24872103	Res, Chip	10K	J 1/16W
RX41	24872103	Res, Chip	10K	J 1/16W
RX42	24872103	Res, Chip	10K	J 1/16W
RX43	24872472	Res, Chip	4.7K	J 1/16W
RX45	24871472	Res, Chip	4.7K	J 1/8W
RX47	24872103	Res, Chip	10K	J 1/16W
RX48	24872102	Res, Chip	1K	J 1/16W
		- MISCELLANEOUS -		
GX01	70113066	FIP	8-BT-142GK	
PX01A	23368267	Connector	4P	
PX02	23902803	Socket	24P	
SX02	23145295	Push Switch		
SX03	23145295	Push Switch		
SX04	23145295	Push Switch		
SX05	23145295	Push Switch		

LOCATION NUMBER	PART NUMBER	DESCRIPTION
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SX06	23145295	Push Switch	
SX07	23145295	Push Switch	
SX08	23145295	Push Switch	
SX09	23145295	Push Switch	
XX01	23153719	Resonator, 8MHz, TCR1022	
XX02	23153860	Crystal, 32.768kHz	
ZR01	23120219	F.U.	IR-9106A-K
ZX03	24000740	Res, Block	47K J 1/8W
UX03	70187911	P C Board Assy	SW/AV Line
		- DIODES -	
DX49	A8606316	Diode, LED	TLG133A-FA
		- CAPACITORS -	
CF91	24781561	Cap, Chip	560PF J 50V
CF92	24781561	Cap, Chip	560PF J 50V
		- RESISTORS -	
RF25	24871750	Res, Chip	75 J 1/8W
RF93	24872224	Res, Chip	220K J 1/16W
RF94	24872102	Res, Chip	1K J 1/16W
RF95	24872224	Res, Chip	220K J 1/16W
RF96	24872102	Res, Chip	1K J 1/16W
		- MISCELLANEOUS -	
PF10	23365355	Phono Jack	
PF11	23365359	Phono Jack	
PF12	23365358	Phono Jack	
PX01B	23368267	Connector	4P
SX01	23145295	Push Switch	
WF51	70160700	Wire	AWG18

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
DIFFERENCE LIST			
V703T			
■UX03	70187853	P C Board Assy	SW/AV Line
■UX02	70187852	P C Board Assy	Timer
DX09	-----	- DIODES -	
		Not Used	
		- RESISTORS -	
RX46	24872153	Res, Chip	15K J 1/16W
■U501	70187854	P C Board Assy	Relay
		- RESISTORS -	
R752	24066949	Res, Variable	100K
■UF01	70187815	P C Board Assy	Terminal/OSP
		- RESISTORS -	
RF30	24000576	Chip Jumper	
RF35	-----	Not Used	
RF36	-----	Not Used	
■U803	70187905	P C Board Assy	Power CTL
■U802	70187894	P C Board Assy	Power
		- INTEGRATED CIRCUITS -	
△IC801	A8645130	IC	TLP721
		- DIODES -	
D802	23316645	Diode	ERA15-06
		- CAPACITORS -	
C804	24082318	Cap, Plastic	0.1MF M 250V
		- RESISTORS -	
R802	24376753	Res, Carbon	75K J 1/2W
		- MISCELLANEOUS -	
T801	23211864	Coil, Linefilter	TRF3144
W851A	-----	Not Used	
■U001	70187850	P C Board Assy	Main
		- INTEGRATED CIRCUITS -	
ICX92	-----	Not Used	
ICX91	-----	Not Used	
		- DIODES -	
DX98	23118041	Diode, Chip	MA111
		- COILS -	
L091	-----	Not Used	
		- CAPACITORS -	
C083	-----	Not Used	
CX98	24090943	Cap, Super	0.047F Z 6.3V
CX99	24792471	Cap, Electrolytic	470MF M 6.3V
		- RESISTORS -	
R080	-----	Not Used	
RX75	24872472	Res, Chip	4.7K J 1/16W
RX91	-----	Not Used	
RX98	24871301	Res, Chip	300 J 1/8W
■UN01	-----	Not Used	
V703W			
■UX03	70187928	P C Board Assy	SW/AV Line
■UX02	70187927	P C Board Assy	Timer
		- DIODES -	
DX06	23118041	Diode, Chip	MA111
DX07	23118041	Diode, Chip	MA111
DX09	-----	Not Used	
DX12	-----	Not Used	
DX13	-----	Not Used	
		- RESISTORS -	
RX46	24872153	Res, Chip	15K J 1/16W
■U501	70187929	P C Board Assy	Relay
■UF01	70187746	P C Board Assy	Terminal/OSP
		- INTEGRATED CIRCUITS -	
ICF01	70128684	IC	BA7645N
ICF03	70128683	IC	BA7611AN
ICF71	70119897	IC	BA7730S

LOCATION NUMBER	PART NUMBER	DESCRIPTION	
ICF72	-----	Not Used	
ICF73	-----	Not Used	
ICF75	-----	Not Used	
		- TRANSISTORS -	
QF06	A6004040	Transistor, Chip	RN1404
QF07	A6541130	Transistor, Chip	2SA1162-Y
QF09	A6541130	Transistor, Chip	2SA1162-Y
QF10	A6004020	Transistor, Chip	RN1402
QF11	A6541130	Transistor, Chip	2SA1162-Y
QF12	-----	Not Used	
QF74	-----	Not Used	
		- DIODES -	
DF04	A7150650	Diode	1SS184
DF06	-----	Not Used	
DF07	A7152750	Diode	1SS226
DF09	A7152750	Diode	1SS226
DF10	A7150650	Diode	1SS184
DF11	A7152750	Diode	1SS226
DF12	A7152750	Diode	1SS226
DF13	A7152750	Diode	1SS226
DF41	A7152750	Diode	1SS226
DF42	A7152750	Diode	1SS226
DF44	A7152750	Diode	1SS226
DF45	A7152750	Diode	1SS226
DF47	A7152750	Diode	1SS226
DF48	A7152750	Diode	1SS226
DF49	-----	Not Used	
		- CAPACITORS -	
CF03	24781560	Cap, Chip	56PF J 50V
CF04	24781181	Cap, Chip	180PF J 50V
CF05	24206010	Cap, Electrolytic	1MF M 50V
CF14	24287103	Cap, Chip	0.01MF Z 50V
CF19	24206010	Cap, Electrolytic	1MF M 50V
CF20	24814103	Cap, Chip	0.01MF Z 50V
CF21	24206228	Cap, Electrolytic	0.22MF M 50V
CF22	24203470	Cap, Electrolytic	47MF M 16V
CF23	24814103	Cap, Chip	0.01MF Z 50V
CF25	24203470	Cap, Electrolytic	47MF M 16V
CF27	24206010	Cap, Electrolytic	1MF M 50V
CF28	24202101	Cap, Electrolytic	100MF M 10V
CF29	24814103	Cap, Chip	0.01MF Z 50V
CF43	24203470	Cap, Electrolytic	47MF M 16V
CF60	24205479	Cap, Electrolytic	4.7MF M 35V
CF61	24205479	Cap, Electrolytic	4.7MF M 35V
CF62	24203220	Cap, Electrolytic	22MF M 16V
CF63	24203220	Cap, Electrolytic	22MF M 16V
CF64	24203100	Cap, Electrolytic	10MF M 16V
CF66	24203100	Cap, Electrolytic	10MF M 16V
CF67	24203100	Cap, Electrolytic	10MF M 16V
CF68	24205479	Cap, Electrolytic	4.7MF M 35V
CF70	24203100	Cap, Electrolytic	10MF M 16V
CF71	24203100	Cap, Electrolytic	10MF M 16V
CF76	-----	Not Used	
CF81	24276151	Cap, Chip	150PF J 50V
CF82	24781151	Cap, Chip	150PF J 50V
CF85	24276151	Cap, Chip	150PF J 50V
CF86	24276151	Cap, Chip	150PF J 50V
CF87	24814102	Cap, Chip	1000PF Z 50V
CF88	24814102	Cap, Chip	1000PF Z 50V
		- RESISTORS -	
RF03	24872223	Res, Chip	22K J 1/16W
RF04	24000824	Chip Jumper	
RF05	24872332	Res, Chip	3.3K J 1/16W
RF07	24872391	Res, Chip	390 J 1/16W
RF08	24872331	Res, Chip	330 J 1/16W
RF09	24871102	Res, Chip	1K J 1/8W
RF15	24872101	Res, Chip	100 J 1/16W
RF16	24871102	Res, Chip	1K J 1/8W
RF17	24871820	Res, Chip	82 J 1/8W
RF18	24871750	Res, Chip	75 J 1/8W
RF22	24871102	Res, Chip	1K J 1/8W
RF23	24871393	Res, Chip	39K J 1/8W
RF24	24872562	Res, Chip	5.6K J 1/16W
RF26	24872102	Res, Chip	1K J 1/16W
RF27	24872112	Res, Chip	1.1K J 1/16W



LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RF28	24871393	Res, Chip	39K	J 1/8W	R080	-----	Not Used		
RF29	24872392	Res, Chip	3. 9K	J 1/16W	R087	24000576	Chip Jumper		
RF30	24872102	Res, Chip	1K	J 1/16W	R090	-----	Not Used		
RF31	24000824	Chip Jumper			R761	24872822	Res, Chip	8. 2K	J 1/16W
RF32	24871681	Res, Chip	680	J 1/8W	R762	24872332	Res, Chip	3. 3K	J 1/16W
RF33	24871681	Res, Chip	680	J 1/8W	RX69	-----	Not Used		
RF34	-----	Not Used			RX75	24872472	Res, Chip	4. 7K	J 1/16W
RF35	24872472	Res, Chip	4. 7K	J 1/16W	RX91	-----	Not Used		
RF36	-----	Not Used					- MISCELLANEOUS -		
RF41	24871562	Res, Chip	5. 6K	J 1/8W	Z090	70137268	F. U.	MPX-W01	
RF42	24871224	Res, Chip	220K	J 1/8W					
RF43	24871562	Res, Chip	5. 6K	J 1/8W	■UN01	-----	Not Used		
RF44	24872224	Res, Chip	220K	J 1/16W	■UB01	-----	Not Used		
RF61	24871562	Res, Chip	5. 6K	J 1/8W	■UD01	70187926	P C Board Assy	NICAM B/G	
RF62	24871562	Res, Chip	5. 6K	J 1/8W			- INTEGRATED CIRCUITS -		
RF63	24871132	Res, Chip	1. 3K	J 1/8W	ICD01	B0100120	IC	TB1204N	
RF64	24871132	Res, Chip	1. 3K	J 1/8W	ICD02	B0385050	IC	TA2009F	
RF65	24872473	Res, Chip	47K	J 1/16W	ICD03	B0350410	IC	TA75557S	
RF66	24871333	Res, Chip	33K	J 1/8W			- TRANSISTORS -		
RF67	24871333	Res, Chip	33K	J 1/8W	QD11	A6357139	Transistor, Chip	2SC3125	
RF68	24871333	Res, Chip	33K	J 1/8W	QD12	A6335477	Transistor, Chip	2SC2712-Y	
RF69	24872333	Res, Chip	33K	J 1/16W	QD13	A6335477	Transistor, Chip	2SC2712-Y	
RF70	24872123	Res, Chip	12K	J 1/16W	QD14	A6335477	Transistor, Chip	2SC2712-Y	
RF71	24872332	Res, Chip	3. 3K	J 1/16W	QD15	A6335477	Transistor, Chip	2SC2712-Y	
RF72	24871123	Res, Chip	12K	J 1/8W	QD16	A6335477	Transistor, Chip	2SC2712-Y	
RF73	24872332	Res, Chip	3. 3K	J 1/16W	QD17	A6335477	Transistor, Chip	2SC2712-Y	
RF74	24872102	Res, Chip	1K	J 1/16W	QD18	A6014060	Transistor, Chip	RN2406	
RF75	-----	Not Used			QD19	A6014010	Transistor, Chip	RN2401	
RF76	-----	Not Used			QD20	A6335477	Transistor, Chip	2SC2712-Y	
RF78	-----	Not Used			QD21	A6335477	Transistor, Chip	2SC2712-Y	
RF79	-----	Not Used			QD22	A6335477	Transistor, Chip	2SC2712-Y	
RF80	24872473	Res, Chip	47K	J 1/16W	QD23	A6335477	Transistor, Chip	2SC2712-Y	
RF83	-----	Not Used					- DIODES -		
RF84	-----	Not Used			DD01	23118041	Diode, Chip	MA111	
RF85	-----	Not Used			DD02	23118041	Diode, Chip	MA111	
RF86	-----	Not Used					- COILS -		
PF02	23116335	Socket, 21P			LD02	23238713	Coil, Peaking	TRF4120AJ	
■U803	70187905	P C Board Assy	Power CTL		LD03	23238714	Coil, Peaking	TRF4100AJ	
■U802	70187894	P C Board Assy	Power		LD04	23238714	Coil, Peaking	TRF4100AJ	
		- INTEGRATED CIRCUITS -			LD05	23237807	Coil, Peaking	TRF4182AC	
IC801	A8645130	IC	TLP721		LD06	23237807	Coil, Peaking	TRF4182AC	
		- DIODES -			LD07	23303052	Filter		
D802	23316645	Diode	ERA15-06		LD08	23262273	Coil, IF	TRF1190T	
		- CAPACITORS -					- CAPACITORS -		
C804	24082318	Cap, Plastic	0. 1MF	M 250V	CD01	24815103	Cap, Chip	0. 01MF	K 50V
		- RESISTORS -			CD02	24815103	Cap, Chip	0. 01MF	K 50V
R802	24376753	Res, Carbon	75K	J 1/2W	CD03	24815103	Cap, Chip	0. 01MF	K 50V
		- MISCELLANEOUS -			CD04	24539474	Cap, Plastic	0. 47MF	J 50V
T801	23211864	Coil, Linefilter	TRF3144		CD05	24815103	Cap, Chip	0. 01MF	K 50V
W851A	-----	Not Used			CD06	24774220	Cap, Chip	22PF	J 50V
■U001	70187925	P C Board Assy	Main		CD07	24774470	Cap, Chip	47PF	J 50V
		- INTEGRATED CIRCUITS -			CD08	24774330	Cap, Chip	33PF	J 50V
ICX91	-----	Not Used			CD09	24815103	Cap, Chip	0. 01MF	K 50V
ICX92	-----	Not Used			CD10	24539474	Cap, Plastic	0. 47MF	J 50V
		- TRANSISTORS -			CD11	24203470	Cap, Electrolytic	47MF	M 16V
Q085	A6004020	Transistor, Chip	RN1402		CD12	24203470	Cap, Electrolytic	47MF	M 16V
Q086	-----	Not Used			CD13	24539104	Cap, Plastic	0. 1MF	J 50V
Q761	A6004040	Transistor, Chip	RN1404		CD14	24539104	Cap, Plastic	0. 1MF	J 50V
		- DIODES -			CD16	24539474	Cap, Plastic	0. 47MF	J 50V
D761	A7150650	Diode	1SS184		CD17	24815103	Cap, Chip	0. 01MF	K 50V
D961	-----	Not Used			CD18	24815103	Cap, Chip	0. 01MF	K 50V
		- COILS -			CD19	24774750	Cap, Chip	75PF	J 50V
L091	-----	Not Used			CD20	24774300	Cap, Chip	30PF	J 50V
		- CAPACITORS -			CD21	24203100	Cap, Electrolytic	10MF	M 16V
C083	-----	Not Used			CD22	24203100	Cap, Electrolytic	10MF	M 16V
C096	24794101	Cap, Electrolytic	100MF	M 16V	CD23	24262152	Cap, Chip	1500P	J 50V
CX99	24792471	Cap, Electrolytic	470MF	M 6. 3V	CD24	24262152	Cap, Chip	1500P	J 50V
		- RESISTORS -			CD25	24206010	Cap, Electrolytic	1MF	M 50V
R064	-----	Not Used			CD26	24206010	Cap, Electrolytic	1MF	M 50V
R070	24000824	Chip Jumper			CD27	24203100	Cap, Electrolytic	10MF	M 16V
R079	24872151	Res, Chip	150	J 1/16W	CD28	24203100	Cap, Electrolytic	10MF	M 16V
				4-20	CD29	24206479	Cap, Electrolytic	4. 7MF	M 50V
					CD30	24590183	Cap, Plastic	0. 018MF	J 50V

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CD31	24590183	Cap, Plastic	0. 018MF	J 50V
CD32	24203101	Cap, Electrolytic	100MF	M 16V
CD33	24203100	Cap, Electrolytic	10MF	M 16V
CD34	24203100	Cap, Electrolytic	10MF	M 16V
CD35	24285103	Cap, Chip	0. 01MF	K 50V
CD36	24203470	Cap, Electrolytic	47MF	M 16V
CD37	24285103	Cap, Chip	0. 01MF	K 50V
CD38	24203101	Cap, Electrolytic	100MF	M 16V
CD39	24815103	Cap, Chip	0. 01MF	K 50V
CD40	24203101	Cap, Electrolytic	100MF	M 16V
CD41	24815103	Cap, Chip	0. 01MF	K 50V
CD42	24203101	Cap, Electrolytic	100MF	M 16V
CD43	24285103	Cap, Chip	0. 01MF	K 50V
CD44	24203470	Cap, Electrolytic	47MF	M 16V
CD45	24285103	Cap, Chip	0. 01MF	K 50V
CD47	24203470	Cap, Electrolytic	47MF	M 16V
CD48	24203100	Cap, Electrolytic	10MF	M 16V
CD61	24203100	Cap, Electrolytic	10MF	M 16V
CD62	24203100	Cap, Electrolytic	10MF	M 16V
CD63	24814103	Cap, Chip	0. 01MF	Z 50V
CD64	24203100	Cap, Electrolytic	10MF	M 16V
CD65	24815103	Cap, Chip	0. 01MF	K 50V
CD71	24781241	Cap, Chip	240PF	J 50V
CD72	24781431	Cap, Chip	430PF	J 50V
CD73	24781241	Cap, Chip	240PF	J 50V
CD74	24781431	Cap, Chip	430PF	J 50V
- RESISTORS -				
RD01	24872182	Res, Chip	1. 8K	J 1/16W
RD03	24872392	Res, Chip	3. 9K	J 1/16W
RD04	24872103	Res, Chip	10K	J 1/16W
RD05	24872392	Res, Chip	3. 9K	J 1/16W
RD06	24872101	Res, Chip	100	J 1/16W
RD07	24872272	Res, Chip	2. 7K	J 1/16W
RD08	24872152	Res, Chip	1. 5K	J 1/16W
RD09	24872393	Res, Chip	39K	J 1/16W
RD10	24872681	Res, Chip	680	J 1/16W
RD11	24872563	Res, Chip	56K	J 1/16W
RD12	24872101	Res, Chip	100	J 1/16W
RD13	24872224	Res, Chip	220K	J 1/16W
RD14	24000576	Chip Jumper		
RD15	24000576	Chip Jumper		
RD16	24872623	Res, Chip	62K	J 1/16W
RD17	24872393	Res, Chip	39K	J 1/16W
RD18	24872102	Res, Chip	1K	J 1/16W
RD19	24872332	Res, Chip	3. 3K	J 1/16W
RD20	24872102	Res, Chip	1K	J 1/16W
RD21	24872242	Res, Chip	2. 4K	J 1/16W
RD22	24872183	Res, Chip	18K	J 1/16W
RD23	24872183	Res, Chip	18K	J 1/16W
RD24	24872101	Res, Chip	100	J 1/16W
RD25	24872101	Res, Chip	100	J 1/16W
RD26	24872102	Res, Chip	1K	J 1/16W
RD27	24872153	Res, Chip	15K	J 1/16W
RD28	24872102	Res, Chip	1K	J 1/16W
RD29	24872153	Res, Chip	15K	J 1/16W
RD30	24872102	Res, Chip	1K	J 1/16W
RD31	24872103	Res, Chip	10K	J 1/16W
RD32	24872123	Res, Chip	12K	J 1/16W
RD33	24872822	Res, Chip	8. 2K	J 1/16W
RD34	24872822	Res, Chip	8. 2K	J 1/16W
RD35	24872102	Res, Chip	1K	J 1/16W
RD36	24872102	Res, Chip	1K	J 1/16W
RD37	24872102	Res, Chip	1K	J 1/16W
RD38	24872102	Res, Chip	1K	J 1/16W
RD39	24872102	Res, Chip	1K	J 1/16W
RD40	24872102	Res, Chip	1K	J 1/16W
RD41	24872202	Res, Chip	2K	J 1/16W
RD42	24872202	Res, Chip	2K	J 1/16W
RD44	24872104	Res, Chip	100K	J 1/16W
RD46	24872680	Res, Chip	68	J 1/16W
RD47	24871681	Res, Chip	680	J 1/8W
RD48	24872391	Res, Chip	390	J 1/16W
RD49	24872102	Res, Chip	1K	J 1/16W
RD51	24066828	Res, Variable	500K	
RD61	24872102	Res, Chip	1K	J 1/16W

LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RD62	24872102	Res, Chip	1K	J 1/16W
RD63	24872102	Res, Chip	1K	J 1/16W
RD64	24872102	Res, Chip	1K	J 1/16W
RD65	24872105	Res, Chip	1M	J 1/16W
RD66	24872204	Res, Chip	200K	J 1/16W
RD67	24872623	Res, Chip	62K	J 1/16W
RD68	24872103	Res, Chip	10K	J 1/16W
RD69	24872472	Res, Chip	4. 7K	J 1/16W
RD70	24000824	Chip Jumper		
RD71	24000576	Chip Jumper		
RD72	24000824	Chip Jumper		
RD73	24000824	Chip Jumper		
RD74	24000824	Chip Jumper		
RD78	24000576	Chip Jumper		
RD81	24000576	Chip Jumper		
RD82	24000824	Chip Jumper		
RD83	24000824	Chip Jumper		
RD84	24000576	Chip Jumper		
RD85	24000824	Chip Jumper		
RD87	24000576	Chip Jumper		
RD90	24872102	Res, Chip	1K	J 1/16W
- MISCELLANEOUS -				
XD01	23153013	Crystal	11. 648MHz	
XD02	23153727	Crystal		
ZD01	70131060	Filter	ZBF253D-00F	
ZD02	70131060	Filter	ZBF253D-00F	

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**TOSHIBA CORPORATION**

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